60 Best Sources for Buying Direct

PC Computing

JULY 1994

WINDOWS 4.0 TEST DRIVE

CHICAGO

Here's your first **hands-on** look at the easiest and **most powerful** Windows ever—better **get ready!**

100MHz!

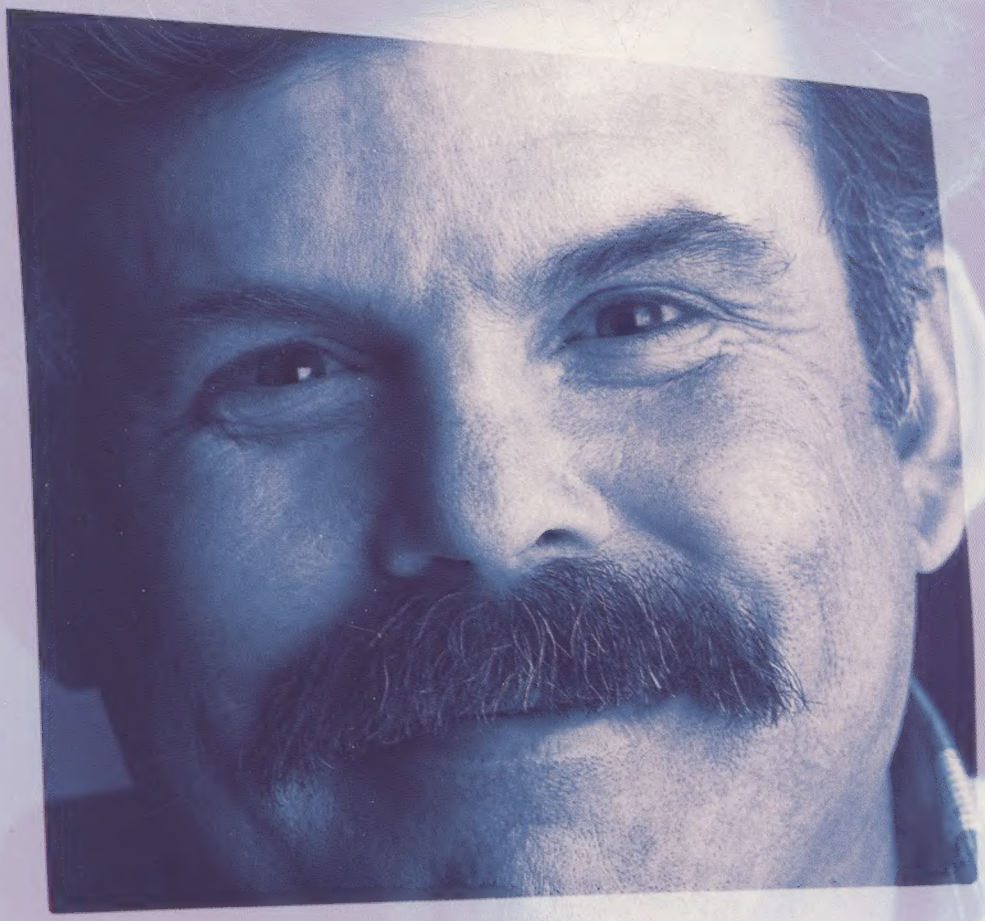
Red-hot CPUs burn up the desktop **118**

Exclusive
First test of dBASE for Windows **152**

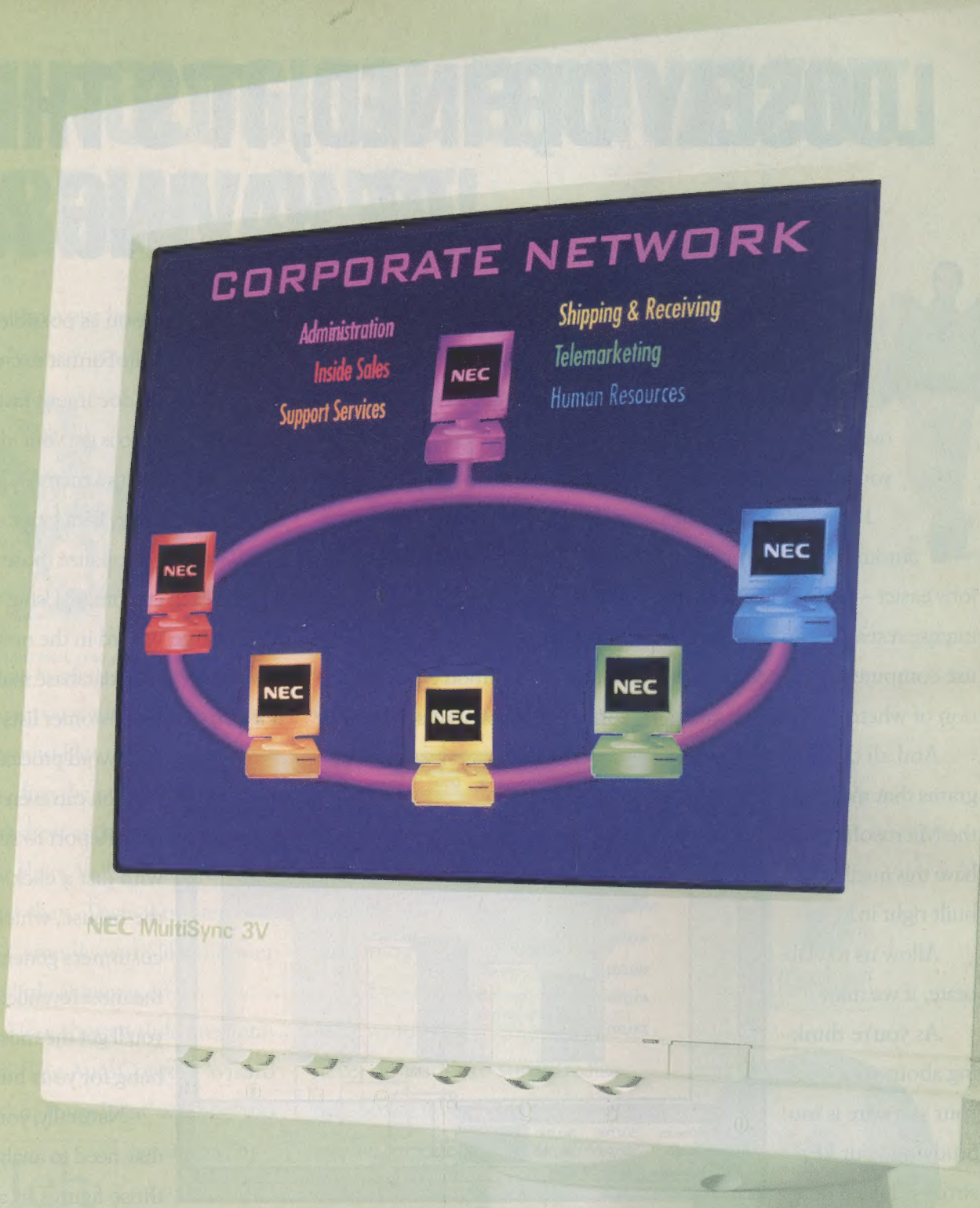
Technolust
Power toys for power users **306**

Ten hours per day.
One hundred and thirty words per minute.

Fifteen hours today.
Sixty-five overnight packages. Tonight.



Two hundred and sixty-five hours this month.
Twenty-eight days out of college.



Introducing the MultiSync® Value Series Monitors.
The affordable solution for those who make your business run.

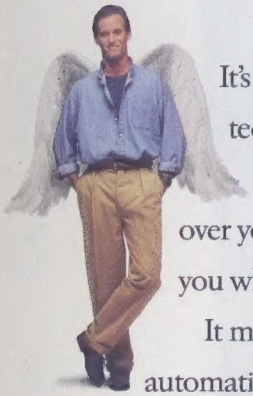
They're the people you count on to get the job done. From secretaries to shipping, they need all the help you can give them. Luckily, the 15" (13.8" diagonal viewable area) MultiSync® 3V and the new 14" (13" diagonal viewable area) MultiSync® 2V give them the bright, sharp images you'd expect from an NEC MultiSync monitor. You also get MPR II compliance, Mac and PC compatibility, high refresh rates and resolutions up to 1024 x 768 NI, all with a 3-year limited warranty. It's more than you'd expect at such a great price. But then again, you're probably used to getting the most for your money. Questions? Call 1-800-NEC-INFO. Or, for information via fax, call 1-800-366-0476 and request document #153501 and #143201. **The easiest monitors to live with for hours and hours: Ours.** NEC

MultiSync 2V

Circle 219 on reader service card.

Optional cable adapter, required for Macintosh connection, available free from NEC. MultiSync is a registered trademark of NEC Technologies, Inc. The Energy Star emblem does not represent EPA endorsement of any product or service. © 1994 NEC Technologies, Inc.

LOOSELY DEFINED, IT'S THE T
OF HAVING A G



It's called IntelliSense™ technology. Simply stated, it watches over you and even helps you when you need it.

It makes routine tasks automatic and complex jobs easier – a direct result of intense research into how people use computers. And an indication of where the future is going.

And all the programs that make up the Microsoft® Office have this intelligence built right in.

Allow us to elaborate, if we may.

As you're thinking about your work, your software is too. Studying your keystrokes. Taking notes. Sensing what you want to do and making suggestions. Even doing a hundred or so of the everyday processes for you.

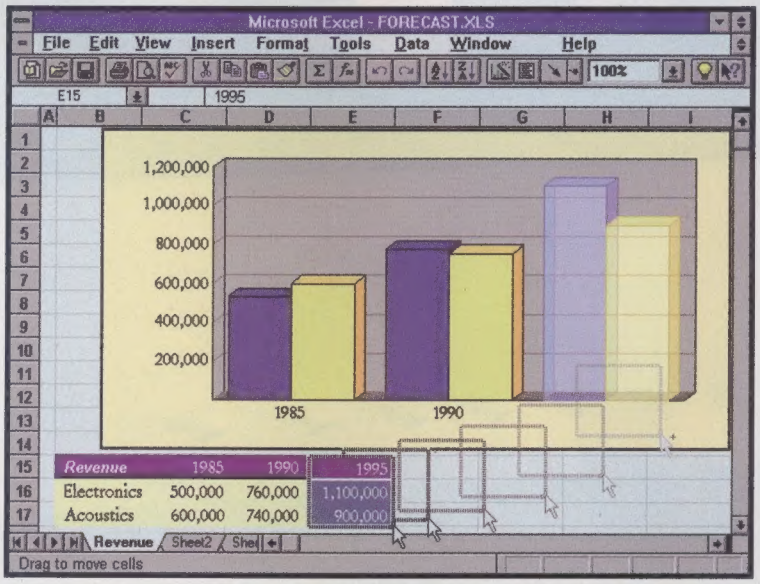
What does this mean? You save time. You're more productive. But you've no doubt heard this before. Let's get to the specifics.

The TipWizard™ assistant watches you work and suggests easier ways to do things.

Say you're writing a letter in Microsoft Word. With a feature called AutoCorrect, your most common typos can be corrected as you make them. For example, "teh" is automatically replaced with "the." Or you can use it as a high-tech shortcut. Just type "asap" and it's replaced with the words "as soon as possible."

Then hit AutoFormat to create a great-looking document fast. All you have to do is get your ideas down and click, it's a memo. Click, it's a report. Click, it's a letter.

Want to personalize those letters for each customer? Using the Mail Merge Wizard in the new Microsoft Access® database makes it a snap to link customer lists to your word processor.



Charts and graphs can now be changed in a single step. All you have to do is drag your new data into place, drop it, and everything is updated automatically.

You can even use AutoReport to see, with just a click of the mouse, which customers generate the most revenue. So you'll get the most bang for your buck.

Naturally, you may need to analyze those figures in a Microsoft Excel spreadsheet. Great. You can look at customer data in a variety of ways with PivotTable™ dynamic views. By product, quarter, region.

*Support for the Microsoft Office is no-charge; however, normal telephone company charges apply. Microsoft support services are subject to Microsoft's then-current prices, terms, and conditions, and are subject to change without notice. Mail workstation license (server and software must be acquired separately). For information only: In the 50 United States, call (800) 894-6642, Dept. JGF. In Canada, call (800) 563-9048. Outside the U.S. and Canada, call your local Microsof

Microsoft Access are registered trademarks and IntelliSense, PivotTable and TipWizard are trademarks of Microsoft Corporation.

ECHNOLOGICAL EQUIVALENT
UARDIAN ANGEL.

Any way your heart desires.

Now say you have some new

Wizards track your every move and guide you step-by-step through a variety of tasks.

figures you want to add to a chart. Drag-and-Plot makes it easy. Step one, drag the numbers from your worksheet and drop them into your chart. Voilà, there's your updated chart. There is no step two.

Certainly, work like this merits a little showing off.

How about a slide presentation? The AutoContent Wizard that's in PowerPoint® will help you get started by organizing the structure and content of your most common presentation topics (selling your product, for instance).

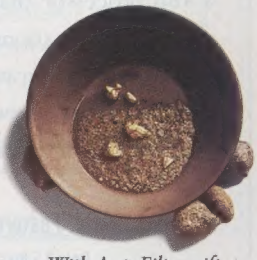
Teh

The

With AutoCorrect, commonly misspelled words are corrected in a blink.

But perhaps the smartest aspect of these best-selling programs is this: They are the only products of their kind that have unlimited product support with no service charge.*

Which brings us back to the point we made a few hundred words ago: Only the Microsoft Office does so many things to make your job easier to do. Because only the Microsoft Office has IntelliSense technology.

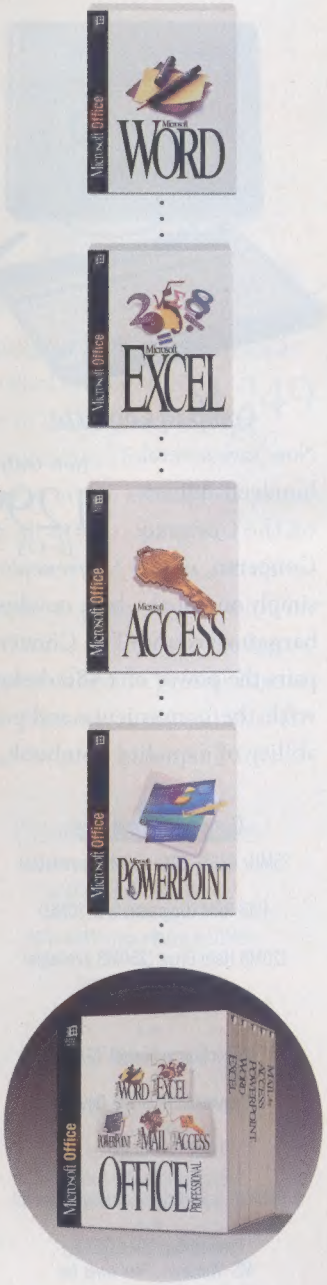


With AutoFilter, sift through a spreadsheet to find specific nuggets of information.

Of course, mere words can never do justice to software like this. So we invite you to visit your reseller, or call us at (800) 894-6642, Dept. JGF, for the name of a computer store near you.

After all, it never hurts to have someone watching out for you.

In this case, it just happens to be your software.



Microsoft Office

994 Microsoft Corporation. All rights reserved. Microsoft Office Professional, shown here, includes: Microsoft Excel, Word, the PowerPoint presentation graphics program, the Microsoft Access database management system and a idiary or (206) 936-8661. Customers who are deaf or hard of hearing can reach Microsoft text telephone (TT/TDD) services by calling (800) 892-5234 in the United States or (905) 568-9641 in Canada. Microsoft, PowerPoint and

YOUR NEXT COMPUTER IF YOU CAN'T FIND

Compaq Concerto

Now save several hundred dollars on the Compaq Concerto, quite simply one of the best notebook bargains around. The Concerto pairs the power of a 486 desktop with the convenience and portability of a quality notebook.

Now Only
$1,299
*Or $75 per month**

Concerto™ Features:

25MHz 486SL (DX), (33MHz available)
◈
4MB RAM (Upgradable to 20MB)
◈
120MB Hard Drive (250MB available)
◈
3.5" Diskette Drive
◈
9.5" Monochrome Backlit VGA Display
◈
Convenient Pointing Device
◈
Local Bus Graphics
◈
2 PCMCIA Type II slots (or single Type III)
◈
Preinstalled MS-DOS® 6, MS-Windows, PenPower for MS-Excel, InkWare NoteTaker, and TabWorks

Compaq Contura Aero

Weighing in at a mere 3.5 lbs., the Contura® Aero is the perfect traveling companion. Though lightweight, it's packed with features, including a 486 processor that can run a range of applications with ease, as well as an integrated Compaq trackball that allows for comfortable use on the road.

$1,399
*Or $50 per month**

Aero™ Features:

Only 3.5 lbs. and 7.5" x 10.25" x 1.5"
◈
25MHz 486SX, 4MB RAM (Upgradable to 12MB)
◈
84MB Hard Drive (170MB available)
◈
8" Monochrome Backlit VGA Display
◈
Integrated Compaq EasyPoint™ Trackball
◈
PCMCIA Type II slot
◈
NiMH Battery & AC Adapter
◈
Preinstalled MS-DOS 6, MS-Windows™ 3.1, and TabWorks®
◈
CALL FOR AVAILABILITY.

Compaq Contura

Monochrome	*Color*
$1,799	**$2,099**
*Or $65 per month**	*Or $75 per month**

An affordable notebook with the power and expandability for demanding business applications, and support for communications options. Power management features extend battery life, and security features protect data.

Contura™ Features:

25MHz 486SL (DX), 4MB RAM (Upgradable to 20MB)
◈
120MB Hard Drive (209MB available)
◈
3.5" Diskette Drive
◈
9.5" Monochrome VGA or 9.5" Color Advanced Passive VGA Display
◈
Compaq Trackball
◈
Battery & AC Adapter
◈
Only 6.2 lbs.
◈
Preinstalled MS-DOS 6, MS-Windows 3.1, & TabWorks
◈
NEW LOW PRICE.

intel inside

*Leasing is provided by GE Capital Services for a term of 36 months and is subject to approved credit and certain terms and conditions. Call for details. †Restrictions and exclusions apply. Monitors, battery packs and certain options are covered by a one-year warranty. Compaq Contura Aero and Concerto are covered by a 3-Year Pick-Up Warranty. © 1994 Compaq Computer Corporation. All rights reserved. Compaq and the Compaq Logo Registered U.S. Patent and Trademark Office. Contura is a registered trademark; Concerto, ProLinea, Aero, EasyPoint and EasyAccess are trademarks, and Compaq DirectPlus and Solution Paq are service marks of Compaq Computer Corporation. Products, prices and programs are subject to change without notice. Other products are trademarks or registered trademarks of their respective companies. Microsoft and MS-DOS are registered trademarks, and Windows is a trademark of Microsoft Corporation. TabWorks is a registered trademark of Xerox Corporation. The Intel Inside Logo is a registered trademark and Pentium is a trademark of Intel Corporation. Offer available in the U.S. only.

The Compaq 3-Year Warranty†

MAY BE ON THIS PAGE. IT, CALL FOR HELP.

Compaq ProLinea MT

MT 4/33s $1,725 *Or $62 per month**

MT 4/66 $2,299 *Or $82 per month**

Minitower case with EasyAccess™ side panel has five expansion slots and five drive bays for superior expandability. Just add options like a fax/modem, tape drive, or CD-ROM drive. Upgradable to Pentium™ technology.

ProLinea™ MT Features:

33MHz 486SX or 66MHz 486DX2 (upgradable to Pentium Technology, ZIF socket)

4MB RAM (upgradable to 64MB)

340MB Hard Drive

3.5" Diskette Drive

Local Bus Graphics with 1MB

14" SVGA Color Monitor (1024 x 768)

Preinstalled MS-DOS 6, MS-Windows 3.1, and TabWorks

Preinstalled Multimedia Solution Paq available.

Compaq ProLinea 4/33S

Enhanced performance with greater affordability. $1,475 *Or $53 per month**

Multimedia Solution Paq™

With SoundBlaster 16-sound board, internal dual-speed CD-ROM drive, external stereo speakers, microphone & multimedia software. Starts at $499.

ProLinea 4/33S Features:

33MHz 486SX (upgradable to Pentium Overdrive)

4MB RAM (upgradable to 100MB)

200MB Hard Drive

3.5" Diskette Drive

Local Bus Graphics with 1MB

14" SVGA Color Monitor (1024 x 768)

Preinstalled MS-DOS 6, MS-Windows 3.1, and TabWorks.

Preinstalled Multimedia Solution Paq available.

Compaq ProLinea Net1/25s

An ideal choice if you're looking for excellent performance at an affordable price. $1,249 *Or $45 per month**

The all-in-one styling saves desktop space and makes set-up as simple as plugging the unit in. TabWorks, a Compaq exclusive, is preinstalled for greater ease of use. Network-ready and ideal for peer-to-peer communications.

ProLinea Net1/25s Features:

25MHz 486SX (upgradable to 486DX2/66)

4MB RAM (Upgradable to20MB)

100MB Hard Drive (200MB available)

3.5" Diskette Drive

Built-in 14" SVGA Color Monitor (1024 x 768)

Integrated Ethernet controller (Token Ring available)

Energy Star Compliant

Preinstalled MS-DOS 6, choice of MS-Windows 3.1 or MS-WFW 3.11

COMPAQ DirectPlus

1-800-888-5951

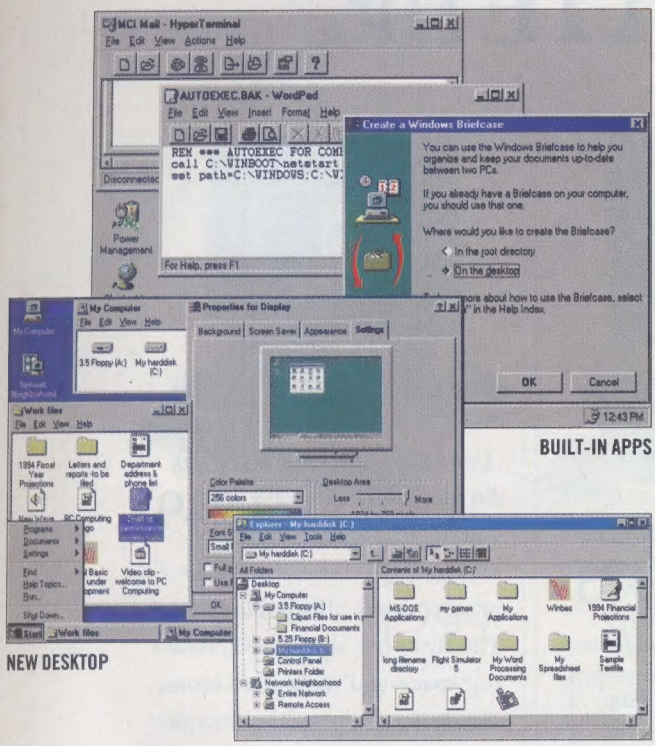
Weekdays 7-7, Sat.10-4 CST

Circle 177 on reader service card.

Ask for our new free catalog.

PC Computing

JULY 1994



BUILT-IN APPS

NEW DESKTOP

THE EXPLORER

CHICAGO WATCH

Windows 4.0

The countdown begins! Code-named Chicago, Windows 4.0 is months away from shipping, but our hands-on preview will help you start planning for a key decision you'll soon face: to upgrade or not? With Plug-and-Play peripherals, multitasking, built-in Internet tools, and no more DOS, Chicago aims to make upgrading a no-brainer. **58**

ROUNDUP

100MHz CPUs

Whether you crunch words, numbers, or graphics, these red-hot systems will help you work more productively. **118**

BRIEFING

Take Notes

Lotus's database/electronic-mail hybrid helps companies large and small trade ideas across space and time. Is it for you? **138**

ACTION ITEM

The New dBASE

Here's the very first usability testing of the new tools and new look in Borland's long-awaited dBASE for Windows. **152**

DIRECTORY

Dialing for Deals

Looking for a good buy? Our annual survey rates 60 top direct vendors on service, support, and warranty policies. **160**

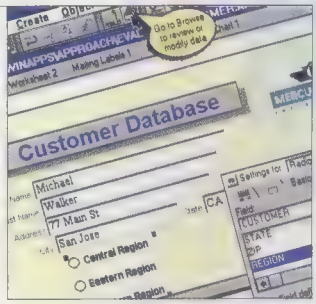
PHOTOGRAPHS BY MARK JOHANN

INTERNET: *With Mosaic, you can troll the World Wide Web. And it's free.* **113**

MORE I-WAY FREEBIES: *Get HGopher 2.3 for free on PC Contact.* **210**

LOGBOOK: *After six months on the road, here's how one notebook fared.* **115**

New!



Lotus Approach 3.0 Can a full-strength database be easy to use? Approach 3.0 makes even complicated applications a snap. **75**

64 Microsoft's Daytona: Windows NT 3.5

69 Video cards from ATI, Diamond, and Number Nine

70 Hewlett-Packard's DeskJet 560C

72 Dell's Latitude 433C-170 and TI's TravelMate 4000M

87 MECA Software's Managing Your Money

90 Asymetrix's Multimedia ToolBook 3.0

92 ConnectSoft's E-Mail Connection 2.0

94 IBM's PC DOS 6.3

96 Fractal Design's Dabbler

98 WordPerfect's Envoy

102 Arabesque's Ecco Professional 2.0

102 Shapeware's Visio Express for Microsoft Office

105 Artisoft's Simply LANtastic

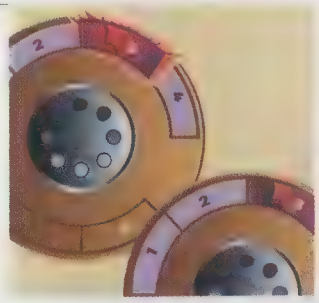
107 Castelle's FaxPress 1000

113 NCSA Mosaic

115 Logbook: AMS's TravelPro 5300 and Microsoft's Word 6.0 for Windows

Pulse Green PCs can cost more than they'll save; CD-ROM drives for notebooks; always carry enough cache; multimedia-ready desktops; Radar; and more! **30**

Help



Hard Disk Got Mauled? ScanDisk, an undocumented MS-DOS 6.2 utility, can make damaged disks whole again. **182**

186 **Windows:** Ed Bott hears cries for Help—the Windows Help utility.

192 **DOS:** Jeff Prosise journeys to the center of DOS.

200 **Applications:** Desktop publishing for most of us.

208 **Networking:** Before you buy a new server, get the most out of your old one.

214 **Toolkit:** How to link Visio to Visual Basic.

222 **How It Works:** Inside the Plug-and-Play standard.

224 **F1:** Is SCSI better than IDE? See for yourself ASAP.

228 **PC Contact:** Download this month's free files.

231 **Direct to You:** In Spec Watch, all the info that you need to buy direct.

Technolust "Make it so!" Sit back in your ergonomic chair, hands floating on its keyboard arms, and boldly go where no PC has gone before. **306**

COLUMNS

MAIL: *By phone, fax, Net, and post.* **23**

PAUL SOMERSON: *Answer: Thud! Question: What's the sound of Apple's Newton hitting the market?* **46**

ED BOTT: *Death to dummyware! Real users need real software. Just how far will the ease-of-use trend go?* **50**

JOHN C. DVORAK: *Thanks to greedy phone companies, many of us are still stuck on the Information Dirt Road.* **54**

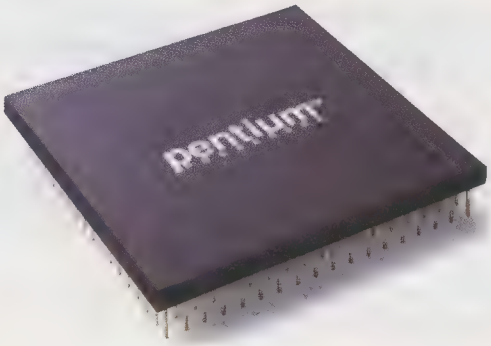
GIL SCHWARTZ: *Battery life is short and then you die. Confessions of a peripatetic power user.* **56**

CD-RON WHITE: *Stalking the elusive killer business apps for CD-ROM.* **309**

PENN JILLETTE: *Virtual reality films are a lot more diabolical when our columnist stars in one.* **312**

The course of computing is hereby changed.

From the old.



*(Actual size.)**

The chip on the left is getting a little old.

Its 15-year-old technology has been pushed to the limit. It worked well enough for yesterday's character-based computers, but it's having a hard time keeping up with the demands of today's computers and software.

The new PowerPC™ microprocessor from Motorola, however, is just getting started.

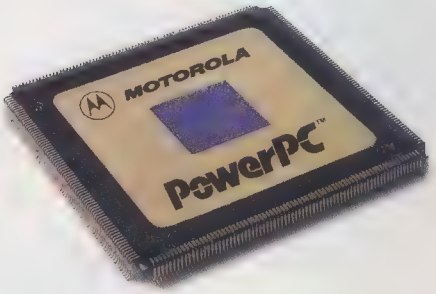
It's based on advanced RISC (reduced instruction set computing) technology, the technology most experts agree is the only way to reach the performance levels required by the new generation of computers and software.

Taking full advantage of its RISC technology, the Motorola PowerPC microprocessor runs

The PowerPC Microprocessor. *The RISC Chip.*

*Both chips shown actual size. ©1994 Motorola, Inc. The Powered by Motorola logo is a trademark and Motorola and the M are registered trademarks of Motorola, Inc. PowerPC and the PowerPC logo are trademarks of IBM Corp. and are used by

To the new.



(Smaller, cooler, faster, cheaper.)

faster, runs cooler, occupies less space and consumes less power. Surprisingly, it costs considerably less than the chip on the left.

POWERED BY MOTOROLA

The first computers based on the PowerPC microprocessor are now arriving. Apple's awesome new Power Macintosh™ computers are here. Potent PowerPC personal computers from IBM® are on the way. Computers powered by the chip on the left, it seems, are on the way out.

See the Power Macintosh at your reseller today. Or for a free copy of our PowerPC Microprocessor Update, call 1-800-845-MOTO (in Europe, 0272 447760). Either way, you'll see a change for the better.

MOTOROLA

Motorola, Inc. under license from IBM Corp. IBM is a registered trademark of IBM Corp. Power Macintosh is a trademark and Apple and Macintosh are registered trademarks of Apple Computer, Inc. Pentium is a trademark of Intel Corp. All rights reserved.

Why just be

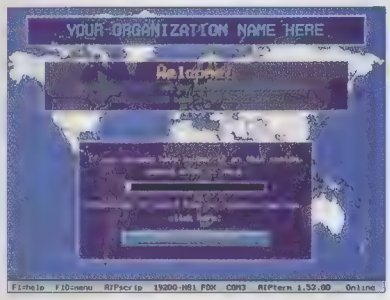
74026.8073@compuserve.com

when you

could be

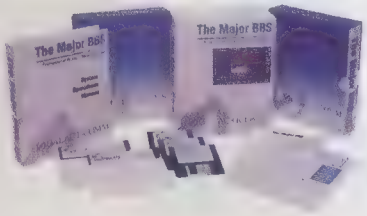
you@your.com

instead?



Don't be a faceless number on the information superhighway. Run your own electronic Bulletin Board Service (BBS), and you can stand out to prospects, customers, friends, and associates on **the Internet.**

The Major BBS lets you operate a full-fledged online service right from your desktop computer. E-mail, file upload/download, message conferences, are all included — and you can add Internet mail and newsgroup forums as easily as "A:INSTALL".



For more information, give us a call at **1-800-328-1128** (outside the U.S. and Canada call 305-583-5990).

GALACTICOMM

Circle 110 on reader service card.

PC Computing

VICE PRESIDENT, EDITORIAL DIRECTOR Paul Somerson

EDITOR-IN-CHIEF Jon Zilber

EDITOR Bill Roberts

FEATURES

FEATURES EDITOR Sebastian Rupley
SENIOR EDITORS Howard Baldwin, Elizabeth Longsworth, Wendy Taylor
ASSOCIATE EDITORS Liesl La Grange, Chris Sandlund

NEWS AND REVIEWS

REVIEWS EDITOR Raphael Needleman
SENIOR EDITORS Matthew J. Lake, Shyamala Reddy
ASSOCIATE EDITORS Kyla K. Carlson, Richard Schwerin
EDITORIAL ASSISTANT Ilan Greenberg

HELP

HELP EDITOR John Montgomery
ASSOCIATE EDITOR Yael Li-Ron

CONTRIBUTING EDITORS

SENIOR CONTRIBUTING EDITORS Ed Bott, Ron White
CONTRIBUTING EDITORS Vincent Chen, Carol Olsen Day, John C. Dvorak, Preston Gralla, Robert Hummel, Marty Jerome, Penn Jillette, Woody Leonhard, Brian Livingston, Jeff Prosise, Winn L. Rosch, Gil Schwartz

LABS AND TECHNICAL

SENIOR TECHNICAL EDITOR/LAB DIRECTOR Adam Meyerson
ASSOCIATE TECHNICAL EDITORS Scott Naylor, John Taschek
PROJECT LEADER Robert Bayley
INVENTORY COORDINATOR Ibrahim Gul
LAB SUPPORT TECHNICIAN Lydia M. Karlowicz

EDITORIAL PRODUCTION

MANAGING EDITOR Debra McDonald
ASSISTANT MANAGING EDITOR Lori A. Uzzo
ELECTRONIC PUBLISHING MANAGER Mark C. Li
SENIOR COPY EDITORS Kim Austin Gallegos, Elisa M. Welch
COPY EDITORS James Oliver Cury, Joe Rossi
PRODUCTION EDITOR Laura Watt
RESEARCH EDITOR Heather Mackey

ART AND DESIGN

ART DIRECTOR Michael Yapp
ASSOCIATE ART DIRECTOR Allyson Appen
SENIOR DESIGNER Kate Godfrey
SENIOR TECHNICAL ILLUSTRATOR Timothy Edward Downs
ART ASSOCIATE Peggy Smith
DESIGN CONSULTANT Anthony Kosner

VICE PRESIDENT, PUBLISHER J. Samuel Huey

MARKETING AND SALES

ASSOCIATE PUBLISHER Nancy Newman
DIRECTOR OF MARKETING Michael Wiener
GENERAL BUSINESS MANAGER Anne H. Ashmead
SUBSCRIPTION DIRECTOR Charles Mast
SINGLE-COPY SALES AND MARKETING DIRECTOR James E. Gerth
SALES DEVELOPMENT MANAGER Tamar Haspel
PROMOTION AND EVENTS MANAGER Julie McGill
MARKETING INFORMATION SPECIALIST Kimberly Black
EVENTS COORDINATOR Caryl Dearing
MARKETING COORDINATOR Katrina Harms

ADMINISTRATIVE

EXECUTIVE ASSISTANT TO THE VP, PUBLISHER Leta C. Fisher
EXECUTIVE EDITORIAL ASSISTANTS Jennifer Lewis, Patti McCaffrey
ASSOCIATE PUBLISHER'S ASSISTANT Melissa Eckholm
RECEPTIONIST Melanie McCullough

PRODUCTION

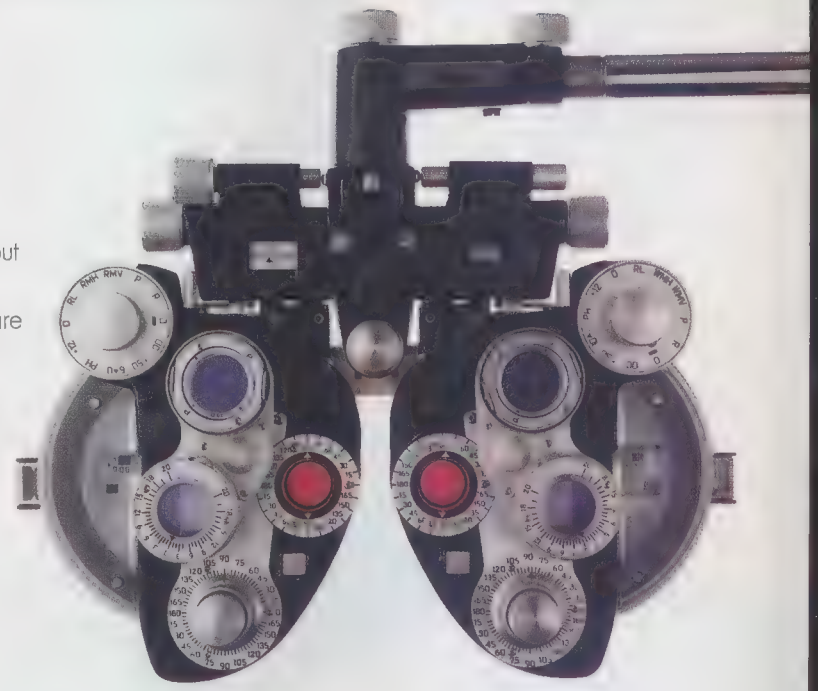
PRODUCTION DIRECTOR Carlos Lugo
PRODUCTION MANAGER Dennis Fitzgerald
ASSISTANT PRODUCTION MANAGER Monique L. Risso

How to Contact the Editors Address editorial feedback to 950 Tower Lane, 19th Floor, Foster City, CA 94404; fax us at (415) 578-7029; contact us via the Internet (76000.21@compuserve.com) or CompuServe (76000,21); or log on to PC Contact to post a public message (see page 228 for log-on instructions). Or telephone **Managing Editor Debra McDonald** at (415) 578-7672. PC Computing is under no obligation to review unsolicited products. All unsolicited submissions become the property of PC Computing. If you want to make a submission to PC Computing, contact one of the following editors—**Features: Sebastian Rupley, (415) 578-7024,** or **Howard Baldwin, (415) 578-7035; News and Reviews: Rafe Needleman, (415) 578-7650; Help: John Montgomery, (415) 578-7608.** If you buy a product advertised in PC Computing, are dissatisfied, and can't resolve the problem, write (please do not call) Leta C. Fisher, Executive Assistant to the VP, Publisher, at the above address. Include copies of all correspondence.

Subscription Inquiries/Change of Address For subscription service questions, address changes, or how to order: Call toll-free (800) 365-2770 in the United States and Canada, or (303) 447-9330 for all other countries; or write to PC Computing, P.O. Box 58229, Boulder, CO 80322-8229. The subscription rate is $24.97 for one year (12 issues). Canada and all other countries require an additional $16 for postage. For back issues (subject to availability), send a check or money order for $7 ($8 outside the United States) to Back Issues Department, Ziff-Davis Publishing Company, P.O. Box 53131, Boulder, CO 80322-3131.

PC Computing on CD-ROM PC Computing is available as part of Computer Select, a CD-ROM published by Computer Library. Each monthly issue of Computer Select contains the full text of the most recent year's issues and more than 60 other leading computer industry publications. For subscription information, call Computer Library at (800) 827-7889, extension 708.

GET THE ULTIMATE 17" MONITOR WITHOUT PAYING THROUGH THE EYES.



For many, a 17" monitor represents a step up in size, but not necessarily a step up in image quality. Unless you are stepping up to the new Nokia Multigraph™ 447X.

First there is the crispness of its .26mm aperature grill. When presented in its maximum resolution of 1600 x 1200, you enjoy a working environment of phenomenal richness, clarity, and detail. Invoke the maximum refresh rate of 120 Hz, and you possess a screen so stable it appears frozen in time. And when you select Nokia's exclusive MicroEmission™ option, this exquisite display represents the most user-sensitive 17" monitor in the world—easily surpassing the rigorous health and environmental criteria of TCO*, and sparing your eyes the strain of hours spent in front of a lesser system. You will also be acquiring conveniences like on-screen adjustments for 19 different user-defined preferences, including FullScreen™ borderless display. You should find the price fits comfortably with your preferences as well.

MAXIMUM REFRESH RATE FOR EACH RESOLUTION

RESOLUTION	640x480	800x600	1024x768	1152x870	1280x1024	1600x1200
447X—17"	120Hz	120Hz	90Hz	80Hz	75Hz	62Hz

Call 1-800 BY NOKIA for the dealer nearest you. And see the latest in European eye care.

447X with MicroEmission option: Max. resolution 1600x1200, Max. refresh 120 Hz; TCO 92 compliant

NOKIA
CONNECTING PEOPLE

©1994, Nokia Display Products, Inc. Multigraph, MicroEmission and FullScreen are trademarks of Nokia Display Products, Inc. *TCO is The Swedish Confederation of Professional Employees. All other trademarks are the sole property of their respective companies. The Energy Star emblem does not represent EPA endorsement of any product or service

Now! $50 Rebate

THE EPSON ES-800C PRO/PC. A SCANNING SYSTEM SO ADVANCED, THERE ARE ONLY TWO WAYS TO IMPROVE IT.

We talked to the pros when we designed the EPSON ES-800C Pro/PC to make it the most advanced professional color scanning system in its class. The 800 dpi ES-800C comes with the outstanding full version of Picture Publisher 4.0, dual cpu connectivity, plus built-in color and gamma controls. It's the best equipped, best value professional scanner you can buy.

How do you improve on a scanner this great? By adding more free software and a $50 rebate. For a limited time, buy an EPSON ES-800C Pro/PC and you'll get a free copy of Charisma multi-media presentation software, a $449 value, plus a $50 scanner rebate*. That's one advanced scanner deal.

EPSON ES-800C PRO/PC

ES-800C Scanner
Picture Publisher 4.0
SCSI card and cable
Two-way connectivity
Built-in Color & Gamma Controls

For more information about the ES-800C Pro/PC, our other scanners for PCs and Macintosh, or our complete line of lasers, ink jets, and other technologically advanced computer products, visit your local EPSON dealer or call the EPSON Connection (1-800-BUY-EPSON). Ask for the special offer that makes the most advanced scanner in the business even better.

***HOW TO GET YOUR REBATE/SOFTWARE: 1)** Buy an EPSON ES-800C Pro/PC between 5/1/94 and 7/31/94. **2)** For rebate/software details and form, call the EPSON Connection, 1-800-BUY-EPSON, or see your local EPSON dealer. Note: software value is manufacturers suggested retail price.

Picture Publisher and Charisma are trademarks or registered trademarks of Micrografx, Inc. EPSON is a registered trademark of SEIKO EPSON CORP. © 1994 EPSON AMERICA, INC., 20770 Madrona Ave., Torrance, CA 90503. For dealer referral or warranty details, call 800-BUY-EPSON (800-289-3776). In Canada, call (800) GO-EPSON. For Latin America, 305-265-0092.

CHARISMA
Powerful
Presentations
Made Simple
The complete
multimedia and
presentation tool
for Windows
CHARISMA
EPSON ES-800C
MORE FREE SOFTWARE
AND A $50 REBATE!
EPSON

Coming Soon

1,001 TIPS Our August issue is the ultimate collection of tips and tricks for just about every major application and hardware product—each one tested by *PC Computing* Labs. We've got tips for beginners, power users, programmers, and network administrators. Before you call technical support or interrupt a colleague's lunch hour, check out our 1,001 Tips.

OPERATING ENVIRONMENTS If you use DOS, Windows, or OS/2, you'll find the best advice for how to tune up your system for optimal performance. Batch files, INI editing, REXX programming—it's all there. We even have advice on how to use your DOS and Windows utilities more effectively.

APPLICATIONS We delve into word processors like WordPerfect, Microsoft Word for Windows, and Ami Pro. We gorge ourselves on 1-2-3, Excel, and Quattro Pro macros. Access, dBASE, and Paradox offer up their innermost secrets. Desktop publishing, presentation graphics, painting and drawing programs, personal information managers, e-mail, schedulers, network operating systems. . . . All told, tips for 65 applications undergo our careful scrutiny.

MAINTENANCE You know you should be cleaning up your hard drive. TMP files are stacking up by the dozen. You've got no idea what program goes with that peculiar INI file. Get with it! Our to-do lists show you how to get your PC shipshape. Now there's no reason not to reclaim that storage.

CELEBRITIES Want to master your apps? What better tip gurus than Phillippe Kahn and Bill Gates? Not to mention Brian Livingston, Jeff Prosise, Woody Leonhard, Ron White, and *PC Computing*'s own Help staff.

EASTER EGGS Tips have their lighter side, too. You know those multimedia shows that appear when you hit just the right key combination? They're called Easter Eggs, and we sent Matthew J. Lake, our master hacker, hunting for them. He found 30—to the best of our knowledge the most comprehensive collection of these entertaining programming tidbits ever assembled.

ALSO NEXT MONTH

Robert L. Hummel explains how modems translate digital signals into a form that can go over your phone lines. When he's through, you'll know enough about modems to make the best buying decision possible: whether you really V.Fast Class, what standards to demand, and what to avoid.

New! looks into the latest in video-conferencing products: Intel's ProShare and Future Labs' TalkShow. Traditional communications gets an update with ProComm for Windows.

We also kick the tires of the latest DX4 machines, check under the hood of Seiko's new color printer, and give Xircom's wireless network adapter a test spin. And, of course, Logbook reports how products are doing in the real world while Technolust catalogs the coolest products money can buy.

PC Computing

ZIFF-DAVIS PUBLISHING COMPANY

CHAIRMAN AND CEO Eric Hippeau
PRESIDENT J. Scott Briggs
PRESIDENT, ZIFF-DAVIS DOMESTIC PUBLICATIONS GROUP Ronni Sonnenberg
EXECUTIVE VICE PRESIDENT, CENTRALIZED OPERATIONS GROUP Mike Edelhart
EXECUTIVE VICE PRESIDENT, INTERNATIONAL J. B. Holston III
GROUP VICE PRESIDENT, CONTROLLED CIRCULATION PUBLICATIONS Claude P. Sheer
GROUP VICE PRESIDENT, PAID CIRCULATION PUBLICATIONS Jeff Ballowe
SENIOR VICE PRESIDENT, CIRCULATION Baird Davis
SENIOR VICE PRESIDENT, MARKETING Paul H. Chook
SENIOR VICE PRESIDENT Rachel Greenfield
VICE PRESIDENT, CENTRAL ADVERTISING SALES Bob Bader
VICE PRESIDENT, CIRCULATION SERVICES James F. Ramaley
VICE PRESIDENT, CONTROLLER Howard Sckolnik
VICE PRESIDENT, CREATIVE SERVICES Herbert Stern
VICE PRESIDENT, EUROPE Frank Kelcz
VICE PRESIDENT, HUMAN RESOURCES Rayna Brown
VICE PRESIDENT/MANAGING DIRECTOR MAGAZINE NETWORKS Joseph Gillespie
VICE PRESIDENT, MARKETING SERVICES Ann Pollak Adelman
VICE PRESIDENT, NEW PROJECTS AND STRATEGIC PLANNING Robert Ziff
VICE PRESIDENT, OPERATIONS Dirk Ziff
VICE PRESIDENT, PRODUCTION Roger Herrmann
VICE PRESIDENT, RESEARCH Rolf M. Wulfsberg
VICE PRESIDENT, TECHNOLOGY William B. Machrone
VICE PRESIDENT, ASSISTANT TO THE CHAIRMAN Tom McGrade
VICE PRESIDENT Jim Stafford
VICE PRESIDENT Don Byrnes
CHIEF INFORMATION OFFICER Wellington Y. Chiu
GENERAL MANAGER Bruce W. Bourne
EXECUTIVE DIRECTOR, INFORMATION SYSTEMS Owen Weekley
EXECUTIVE DIRECTOR, MARKETING SERVICES Jim Manning
DIRECTOR OF LICENSING Jean Lamensdorf
DIRECTOR OF PLANNING Gary A. Gustafson
PRODUCTION DIRECTOR Walter J. Terlecki
DIRECTOR OF CORPORATE MARKETING Susan Delman
EDITORIAL DIRECTOR Lewis D'Vorkin
CO-DIRECTORS, ZD BENCHMARK OPERATION Bill Catchings, Mark L. Van Name
DIRECTOR, DIRECT MARKETING PROGRAMS Alicia Marie Ivans
DIRECTOR OF PUBLIC RELATIONS Gregory Jarboe

ZIFF COMMUNICATIONS COMPANY

CHAIRMAN EMERITUS William B. Ziff, Jr.
CHAIRMAN AND CEO Eric Hippeau
SENIOR VICE PRESIDENT AND CHIEF FINANCIAL OFFICER Bruce R. Barnes
SENIOR VICE PRESIDENT Steven C. Feinman
VICE PRESIDENT, GENERAL COUNSEL AND SECRETARY J. Malcolm Morris
VICE PRESIDENT, BUSINESS MANAGER T. L. Thompson
VICE PRESIDENT, CHIEF INFORMATION OFFICER Thor Olson
CONTROLLER AND TREASURER Timothy J. Mitchell

PC Computing is an independent journal, not affiliated in any way with IBM Corporation. PC Computing is a registered trademark of Ziff-Davis Publishing Company, L.P. The following are trademarks of Ziff-Davis Publishing Company, L.P.: American Computing, Fast Facts, The Magazine for Business Computing Experts, PC Contact, PC Sources, Perfect 10, Personal Computing, Pro Tips, Software Secrets, and The Ultimate PC. Entire contents copyright © 1994 by Ziff-Davis Publishing Company, L.P. All rights reserved.

Millions of people already have.

We're Mitsumi. We're one of the world's leading suppliers of PC peripherals. Keyboards, mice, floppy disc drives and CD-ROM drives†. So we're used to being used.

Case in point: our new double-speed CD-ROM drive has the highest reliability rating in the industry. Buy one today and you can be assured that you'll get optimum performance and longevity. And each of our three keyboard models is guaranteed to withstand more than 10 million keystrokes. So you can pound out literally millions of documents without missing a beat.

Mice? Floppy disk drives? Just as tough.

Price is another Mitsumi advantage that millions of computer users have experienced. Because high volume production is our specialty, we're able to offer world-class peripherals at prices that help keep your bottom line—in line.

So share what millions of Mitsumi customers have already done.

Drag Us. Punch Us. Drive Us. Call Us.

NEW FROM MITSUMI

The New Mitsumi Wireless Printer Sharing Kit.

For remote networking with no cards or cables. Connects up to sixteen PCs to any one of four individual printers. Easily attaches to parallel port.

1-800-MITSUMI

For more information and literature.

MITSUMI

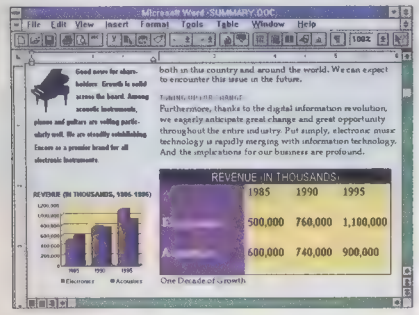
†Mitsumi CD-ROM Drives are MPC Compliant. Supports KODAK PhotoCD and all international standards. ©1994 Mitsumi Electronics. All rights reserved.

MICE KEYBOARDS FLOPPY DISK DRIVES CD-ROM DRIVES

A MILLION WORDPERFECT MICROSOFT WORD. MAKE

More and more people are coming aboard the most popular word processor for Windows.™ That's understandable. After all, Microsoft® Word is the world's best-selling word processor.

As well as the most acclaimed. *InfoWorld* recently stated, "We found Microsoft Word 6.0 for Windows to be the best all-around



With just the click of a button, Word's custom toolbar lets you add graphics, make tables, and bring in data from other programs.

word processing program." In addition to this, *PC Magazine* has referred to it as "...probably the most elegant and powerful word processor ever written."

We've also made switching to Word extremely convenient. As a million WordPerfect® users found out, Word not only converts their old files with the formatting intact, but allows you to type in familiar

WordPerfect commands, while showing you the corresponding Word command. So you can learn as you work. All the time discovering features in Word that weren't available to you before.

Take our exclusive IntelliSense™ technology. Built-in intelligence that actually recognizes what you want to do and provides features that help you do it, in a lot less time. Simple tasks are automatic, more complex jobs are a snap.

Enter AutoCorrect. It can fix

*Microsoft support is no-charge; however, normal telephone company charges apply. Microsoft support services are subject to Microsoft's then current prices, terms, and conditions, which are subject to change without notice. WordPerfect charges SRP and for rebate upon acquiring Microsoft Word 6.0. Word 6.0 will search your system to confirm your eligibility for this special upgrade edition. Offer good only in the 50 United States. Microsoft Office Professional edition includes: Microsoft JCU. For information only. In Canada, call (800) 563-9048; outside the U.S. and Canada, call your local Microsoft subsidiary or (206) 936-8661. Customers who are deaf or hard of hearing can reach Microsoft text telephone (TT/TDD) services by Publishing Company L.P. © 1994 Microsoft Corporation. All rights reserved Microsoft, Microsoft Access and PowerPoint are registered trademarks and IntelliSense and Windows are trademarks of Microsoft Corporation. WordPerfect is a registered

USERS HAVE MOVED UP TO THAT A MILLION AND ONE.

lets you focus on your work, not on finding your tools.

There's something else you get with Word that's becoming increasingly rare. Something that WordPerfect has walked away from: unlimited product support with no service charge.* Support so good that the Information Technology Association of America has awarded Microsoft their 1993 award for quality. (For WordPerfect users there's a phone number to make switching even easier.)

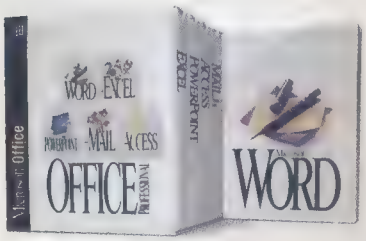
To make the move to Word more inviting, you can now upgrade for only $99.** For a reseller near you, call (800) 894-6642, Dept. JCU. And you'll see why so many former WordPerfect users have set a new course with Word.

your misspellings and common typos as fast as you make them.

Teh → The

And AutoFormat, which creates great-looking documents at the click of a button. Instantly.

Meanwhile, Word is a part of the Microsoft Office, where every program works together like one. So now it's even easier to share data between programs without leaving your document. It's simply our OfficeLinks integration that



Microsoft Office

for unlimited product support after 180 days. **Pricing based on $30 rebate off $129 Upgrade SRP. Reseller prices may vary. Licensed users of WordPerfect, other competitive word processors, and previous versions of Microsoft Word qualify for $129 Excel, Word, the PowerPoint® presentation graphics program, the Microsoft Access® database management system, and a Mail workstation license (server and software must be acquired separately). In the 50 United States, call (800) 894-6642, Dept calling (800) 892-5234 in the United States or (905) 568-9641 in Canada. Quotes used by permission. Reprinted from *InfoWorld*, February 7, 1994. © 1994 International Data Group. Reprinted from *PC Magazine*, February 8, 1994. © 1994 Ziff Davis trademark of WordPerfect Corporation.

New DOS 6 Utilities From Jeff Prosise

Plus Two Great Books!

ISBN: 1-56276-095-5
Price: $39.95

ISBN: 1-56276-097-1
Price: $29.95

Jeff Prosise designs some of the world's best DOS utilities, according to legions of *PC Magazine* and *PC/Computing* readers. Most think he's a darn good writer, too.

Prosise, *PC Magazine*'s "Tutor" columnist, a *PC/Computing* contributing editor, and the author of two best-selling books on DOS, has already spent months exploring DOS 6. He's mastered its powers, unearthed its secrets—and written some of the finest utilities ever to hit the scene.

Now, in two exciting disk/book combos, Prosise offers you these utilities to supercharge your system and heighten your productivity. The utilities were written by Prosise exclusively for his readers and are included in the price of the book. In the text, Prosise shares the wisdom behind the utilities and presents rarely seen performance tips in his distinctively straightforward, hands-on writing style.

PC Magazine DOS 6 Memory Management with Utilities: Jeff Prosise reveals hidden memory areas and memory-saving DOS techniques—many of them previously undocumented—and guides you as you put them to work.

PC Magazine DOS 6 Techniques and Utilities: Productivity solutions from *PC Magazine*'s DOS wizard! Optimize your system configuration, streamline your batch files, write custom programs with QBasic, and much more.

ZIFF-DAVIS ZD PRESS

© 1993 Ziff-Davis Press

Available at all fine bookstores, or by calling 1-800-688-0448, ext. 207.
For more information on quantity purchases for corporate or government training, please ask for Cindy Johnson.

PC Computing

VICE PRESIDENT, PUBLISHER J. Samuel Huey

SALES MANAGEMENT

ASSOCIATE PUBLISHER Nancy Newman
(415) 578-7076

ASSOCIATE PUBLISHER/EAST COAST Sloan Seymour
(212) 503-4830

WESTERN ADVERTISING DIRECTOR William P. Howard
(415) 578-7570

ADVERTISING SALES MANAGER William B. Wise
(415) 578-7052

ADVERTISING COORDINATOR Melissa Casey
(415) 578-7031

ADMINISTRATIVE ASSISTANT Karen Maske
(415) 578-7017

SALES COORDINATOR Francie More

SALES ASSISTANTS Kerry Barlas, Heidi Cerenzia, Jennifer Criddle, Erving Dockery, Caroline March-Long, Richard McNees, Pam Norris, Bennett Schneider, Tom Wan, Jennifer Williams, Alice Yeh

ADVERTISING SALES OFFICES

NEW ENGLAND
Joyce Rossell, District Manager, 10 Presidents Landing
Medford, MA 02155, (617) 393-3306
Debra Donovan, Account Representative (415) 578-7068

MID-ATLANTIC
John R. DeSpirito, District Representative,
One Park Ave., New York, NY 10016, (212) 503-4907
Monica Sembler, Senior Account Representative
(415) 578-7067

MIDWEST
Craig Westcott, District Manager, 150 North Wacker Dr.,
Suite 2500, Chicago, IL 60606, (312) 214-7333
John Zaterka, Account Representative (415) 578-7065

SOUTHEAST
Thalia Karakitsios, District Manager, 3405 Piedmont Rd.
NE., Suite 460, Atlanta, GA 30305, (404) 814-8960

SOUTH CENTRAL
Peter Muller, District Manager, 5956 Sherry Ln., Suite 625,
Dallas, TX 75225, (214) 360-5755
George Carney, Account Representative (415) 578-7056

SOUTHWEST
David Lynn, District Manager, 18301 Von Karman Ave.,
Suite 330, Irvine, CA 92715, (714) 852-5912
Michael J. King, District Manager, 11766 Wilshire Blvd.,
Suite 1550, Los Angeles, CA 90025, (310) 268-1360
Stacey Levy, Account Representative (415) 578-7066

SAN FRANCISCO BAY AREA/PACIFIC NORTHWEST
Kelly Worrall, District Representative, 950 Tower Ln.,
19th Floor, Foster City, CA 94404, (415) 578-7061
Gwyn Jones, Account Representative (415) 578-7070

SAN JOSE
Phil Kramer, District Manager, 950 Tower Ln.,
19th Floor, Foster City, CA 94404, (415) 578-7073
Anne Dewling, Senior Account Representative
(415) 578-7058

MARKETPLACE SALES OFFICE
Ziff-Davis Publishing Company, One Park Ave., 3rd Floor,
New York, NY 10016, (800) 825-4237

Permission and Reprints Material in this publication may not be reproduced in any form without permission. Written requests for permission should be addressed to Chantal Lavelanet. For information on reprints in quantities of 500 or more, call Carol Peters at (212) 503-5447, Ziff-Davis Publishing Company, One Park Ave., New York, NY 10016. Printed in the U.S.A. Canadian GST registration number is R123669673.

The Audit Bureau

Serious Savings on Toys!

A Quantex Multimedia Package Priced to Make You Smile

The cost of computer toys can really add up. That's why, at Quantex, we're committed to giving you the most features at the best prices. Multimedia is no exception. Quantex has put togther two multimedia packages that will meet your needs and excite your senses. And these toys are no kid's stuff. Take a look at what we've got for you.

Blast off to **MPC Level 2** standards with our double-spin **CD-ROM** drive and **Sound Blaster™** compatible 16-bit stereo sound card with stereo speakers. Run wild with one of these CD-ROM bundles: the first system includes **Compton's Interactive Encyclopedia™, Microsoft® Dinosaurs,** and **Microsoft Works**, while the other features **Compton's Interactive Encyclopedia, Dictionary of the Living World, Compton's Family Choice, Mayo Clinic Family Health Book,** and the **Kodak® Photo CD**!

Plus, go for the gold with **Microsoft Money** and **Microsoft Entertainment Pack**. Zip along the communication highway with our built-in high-speed fax/modems. Access over 17,000 databases with **CompuServe®**, **Prodigy®**, and **America On-Line**. And the **Pentium™ OverDrive™ Ready** ZIF socket makes future processor upgradeability a cinch.

Take advantage of this multi-faceted multimedia package from Quantex. Give us a call now. You'll discover we may sell toys, but we don't fool around.

Multimedia Systems

Q486SX/33VM-1 $1395

- Intel486™ SX33 Processor
- 4MB RAM
- 340MB 12ms IDE Hard Drive
- 3.5" 1.44MB Floppy Drive
- VESA Bus Graphics Accelerator w/ 1MB
- 14" 1024x768 NI Color Monitor
- 5-Bay desktop case
- 101-Key enhanced keyboard & Mouse
- 9600/2400 Baud Fax/Modem w/software
- Double-spin multisession CD-ROM drive
- 16-Bit Stereo Sound Card w/speakers
- MS-DOS & WFW 3.11
- 3 CD Discs: Compton's Interactive Encyclopedia, MS-Dinosaurs & MS-Works
- MS-Money & MS-Entertainment Pack
- Prodigy, Compuserve, and America On-Line

Q486DX2/50VM-1 $1575
Q486DX2/66VM-1 $1595
Q486DX4/100VM-1 $1895

QP5/60PM-1 $2295

- Intel Pentium™ Processor
- 8MB Ram, 256KB Fast Cache
- 420MB 12ms IDE Hard Drive
- 3.5" 1.44MB Floppy Drive
- PCI Bus Graphics Accelerator w/ 1MB
- PCI Local Bus Enhanced IDE controller
- 15" Digital Color NI Monitor
- 11-Bay Mid-Tower case
- 101-Key enhanced keyboard & Mouse
- 14,400 Baud Fax/Modem w/software
- Double-spin multisession CD-ROM drive
- 16-Bit Stereo Sound Card w/speakers
- MS-DOS & WFW 3.11
- 5 CD Discs: Compton's Interactive Encyclopedia, Compton's Family Choice, Dictonary of the Living World, Mayo Clinic Family Health Book, and Kodak Photo CD
- MS-Money & MS-Entertainment Pack
- Prodigy, Compuserve, and America On-Line

PCI SYSTEM

Q486DX2/66PM-1 $1975
QP5/66PM-1 $2395
QP5/90PM-1 $2595

QUANTEX Microsystems, Inc.

1-800-787-8686

Caviar WESTERN DIGITAL

intel inside

VISA

Quantex accepts prepaid checks, Visa, Mast... Purchase orders from government agencies, universities, and Fortune 1000 companies also accepted. On Site Service may not be available in certain remote areas. ... (MA) number and must be in original packaging. The cost for returned freight is not included with any Money Back Guarantees, shipping charges are not ... Quantex Microsystems cannot be responsible for errors in typography or photography. The Intel inside Logo, Intel486 OverDrive and Pentium are trade... may be the property of other companies. Screen image stimulated. Baby picture from Tony Stone Images

A PENTIUM MACHINE SO ADVANCED, IT EVEN REDUCES THE DRAG ON YOUR WALLET.

This could be one of those rare occasions when what you want coincides with what you can afford. You want speed. You want a good price.

That's the whole idea behind our new, expanded Bravo line. These machines are designed, engineered and tested with the same exacting level of attention that goes into every single AST computer.

Our new Bravo MT mini-tower features Intel's incredibly fast Pentium™ 60MHz microprocessor. It's all the power you need to run an entire workgroup or the latest graphics-intensive programs.

There's more that's new, too. Our entire Bravo LC family, while still affordable, has new muscle: Intel 486 microprocessors up to 100MHz and a VESA local bus slot. So the LC is fast today, and can grow right along with your business needs. It's even upgradable

BRAVO LC *Intel DX4/100,486DX2/66, 486SX2/50, 486SX/33, 4 ISA slots including 1VL slot, 5 drive bays, Pentium OverDrive upgradable.* **BRAVO LP** *Intel 486DX2/66, 486SX2/50, 486SX/33, 2 ISA slots, 3 drive bays, Pentium OverDrive upgradable.*

*©1994 AST Research, Inc. All rights reserved. AST, AST Computer, AST logo are registered trademarks of AST Research, Inc. The Intel Inside logo is a registered trademark, and Pentium and Pentium OverDrive are on-site and two-year carry-in warranty for hard-drive models. Three-year carry-in warranty for non-hard-drive models.**CY93 unit volume shipments of AST and AST manufactured brands (International Data Corp.).*

BRAVO MT *Intel Pentium 60MHz, 486DX2/66, 486SX2/50, 486SX/33, 6 ISA slots, 6 drive bays, FlashBIOS. Pentium 60MHz includes 5 ISA and 2 VL slots.*

to Intel's Pentium OverDrive™ processor.

How about more performance in less space? The Bravo LP is a low profile 486, full of award-winning engineering. For instance, innovative security features help you keep your confidential work to yourself. While the V-RAM is expandable to 2MB for 64-bit processing.

Our 486 Bravos are all EPA Energy Star approved. So you can save energy, money, and perhaps even a few trees. A three-year warranty,* along with the most responsive around-the-clock phone support anywhere provide backup. But then, would you expect anything less from the world's fifth largest manufacturer of personal computers?**

3 YEAR WARRANTY

intel inside

Oh, yes. You wanted a good price. We already agreed to that right up front. For an AST reseller near you, please call 800-876-4AST.

AST® COMPUTER

*trademarks of Intel Corporation. All other trademarks are the property of their respective owners. *One-year*

HOW TO IMPROVE NEXT QUARTER'S PROJECTIONS.

You want the ideal color printer. The one that will output powerful and persuasive slide-quality transparencies and prints.

Yet you don't want to blow your budget in the process. You want the KODAK COLOREASE PS Printer. Because this PC Editor's Choice award-winner comes fully loaded with everything you need to turn mission-critical presentations into missions accomplished.

We're talking complete compatibility with your MACINTOSH Computer or WINDOWS Software. True ADOBE POSTSCRIPT® Level 2 Language built in. A plug-in module for ADOBE PHOTOSHOP Software. Optional Ethernet capabilities. And a one-year, on-site manufacturer's warranty.

POSTSCRIPT Software From Adobe

Not to mention 16.7 million colors, 256 levels of gray, 300 ppi resolution, 35 resident fonts, simultaneous printing and processing. And ULTRACOLOR Software from Kodak, which gives you great color the first time. And every time. All from your desk top. At a price you can afford.

So call 800 344-0006 (800 465-6325 in Canada) today for a free output sample and dealer information. Never before has a color printer been able to do so much, so fast. For so little.

1994 WIN AWARD W 100 WINDOWS MAGAZINE

PC MAGAZINE EDITORS' CHOICE

Photo © Rob Stanton/Jamey Stillings 1994 © Eastman Kodak Company 1994 Kodak and ColorEase are trademarks of Eastman Kodak Company. Macintosh is a trademark of Apple Computer, Inc. Windows is a trademark of Microsoft Corp. Adobe, Adobe Photoshop, PostScript, and the PostScript symbol are trademarks of Adobe Systems, Inc.

Circle 247 on reader service card.

FOOLS RUSH IN

Believe Everything You Read

I like to consider myself fairly astute about politics and politicians; after all, I cover the Connecticut legislature for the Associated Press. But I must confess, I sure was sucked into believing John C. Dvorak's April column about drinking and driving on the Information Superhighway ("Trust Congress? Not With This Unbelievable Lair of Slop," page 88). A place like Washington, D.C., makes the craziness of his column all the more plausible, and I almost called our capitol correspondent to see if she'd look into it. Thanks for an entertaining read!

LISA MARIE PANE
COMPUSERVE 71524,127

Paper Shredder Included

I certainly enjoyed Dvorak's little April Fools' gag, which I fell for until the last line—despite all the clues. If his imaginary legislation somehow comes true, and Oliver North isn't elected this November, North would probably love to head up the modem cops—so long as he's not accountable to anyone. Hmmm. Maybe the column wasn't so funny after all.

BRADLEY BEACHAM
SALT LAKE CITY, UTAH

My Letter to Al

OK, guys, Dvorak had me fooled for about 24 hours. But I can't help but wonder: What did Al Gore do with my e-mail?

KAREN KELCH
COMPUSERVE, 74041,2046

Into the Unfunny Realm

I'm strongly displeased with your decision to run Dvorak's April Fools' column. The problem with his spoof is that it was too well written and altogether believable given our current legislative bodies. I've seen other spoofs in magazines, but they are usually obvious enough to be funny. Dvorak's column crossed into the unfunny realm, and I called both my senator and Senator Leahy. I'm sure our representatives in Congress have better things to do than field calls from angry constituents over this type of slop.

ROBERT BENISH
FREDERICKSBURG, VIRGINIA

IF WE ARE to be faulted for writing too well, so be it. And if it's any consolation, even some of our staff were fooled. See you next April. **RS**

Caveat Emptor Revisited

Your April article on color printers and scanned images ("Scan It, Edit It, Print It," page 134) conflicts with the Tektronix advertisement on page 193 of the same issue. The article states a print time of one to two and a half *hours* per page, while the advertisement states a rate of two pages per *minute*. What gives?

CULLEN MOORE
SUN CITY, ARIZONA

IN OUR REVIEW we tested a different technology and different Tektronix model from the one in the ad you mention. Also, our testing was based on real-world printing tests of scanned photographic images—extremely large files. Printing speeds vary depending on printer or system configuration, file format, size, source, and paper medium. **KC**

A Less-than-Colorful Review

Your article on color subnotebooks ("How Small Can Color Get?" April, page 105) was disappointing. It omitted details about the video capabilities of the machines reviewed. How many colors can they display on their built-in screens? Do all of them have an external-monitor port? If so, how many colors can be displayed on each monitor? You also failed to mention which ports are available on the Toshiba Portégé T3400CT, and you didn't mention if the MidWest Micro Elite 486SX/33 has a video port.

MICHAEL CANUEL
HOBOKEN, NEW JERSEY

ALL THE SUBNOTEBOOKS we tested provide VGA ports that support 256 colors at 640 by 480 resolution. They all come with parallel and serial ports as well. Woe to the manufacturer who would ship a machine with anything less. We will always highlight this information if such features are missing. **MJ**

Unclear on the Concept

Your review of allClear ("FlowCharter and allClear: Almost Worth a Thousand Words," May, New! page 54) was extremely naive in its lack of understanding of the problems faced by customers implementing total quality management (TQM) solutions. allClear's scripting capabilities automatically produce diagrams without having to draw a single line. The value of this approach is clear to users involved in analyzing lengthy and cumbersome corporate procedures (try to drag, drop, and connect 200 boxes). Adding new boxes to a complex diagram in the drag and drop environment is almost impossible.

allClear also easily generates diagrams automatically from a number of input

sources, such as outlines, word processing documents, databases, and spreadsheets. While it includes drawing tools, we discourage their use, especially for TQM. It is important to think about the procedure, not about how the chart should be "visualized." We do not visualize pie charts or bar charts—we trust software to produce the chart automatically from the data.

In addition, the review incorrectly stated that allClear limits the number of fonts available to the user, and your inappropriate comparisons with ABC FlowCharter mischaracterized certain facts: allClear offers a fit-in-one-page feature and includes more than 180 shapes (including all of the ISO-compliant shapes).

VADIM YASINOVSKY
PRESIDENT, CLEAR SOFTWARE

The FreeNet Alternative

I enjoyed Preston Gralla's Internet article ("Surf Cyberspace: Windows Front Ends to the Internet," April, New! page 60), but I am disappointed that he didn't mention an important alternative to commercial Internet services—FreeNets. There are currently 20 FreeNets operating in major North American cities, as well as a few in Europe.

True to their name, FreeNets have no usage fees, unlimited access time, and a range of services to rival most commercial access providers, including e-mail, Gopher, Usenet news, chat, and FTP. More importantly, FreeNets offer areas for posting regional information, and many have public-access terminals available for people without computers. Your readers will appreciate this community-based alternative.

DAVID LOAN
OTTAWA, CANADA

Wanted: Anonymous Server

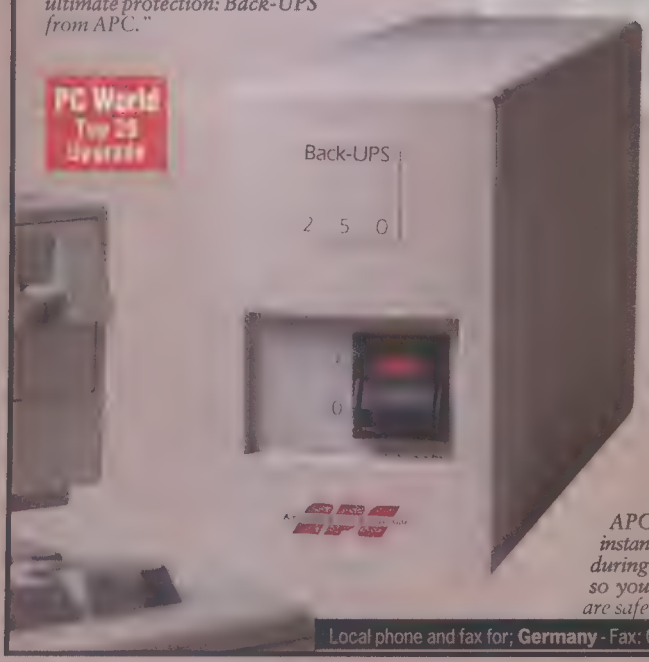
Thanks for the great articles on Internet access in your April issue ("Surf Cyberspace: Windows Front Ends to the Internet" and "The Mother of All Networks," page 180). I look forward to more Internet information, especially WinSock and Serial Line Internet Protocol/Point-to-Point Protocol (SLIP/PPP). However, it's frustrating to read and salivate about your "App of the Month," then realize it's on a CompuServe server and out of my reach. If you're going to write about the Internet, use it. Set up an anonymous FTP server, and then Internet readers can benefit as well.

IKE BOTTEMA
IBOTTEMA@SCE.CARLETON.CA

MOSAIC, WINSOCK, GOPHER and many other of our featured apps are *already* available on the Internet in myriad places. Our goal was to bring Internet connectivity to readers who aren't already on the Net, but who are on CompuServe. If you are on the Internet, try an anonymous log in at ftp.ncsa.uiuc.edu. Log in as anonymous, and use your username as the password. Browse around and you should find Mosaic and WinSock, among other applications. You can then use Mosaic as a Gopher client, too. **JM**

Introducing the $139 investment no computer user can afford to be without...

"Don't take chances...Get the ultimate protection: Back-UPS from APC."



Blackouts, brownouts, sags... if you use computers, your bottom line is directly linked to your power line. The fact is, your data and hardware are vulnerable to problems that surge suppressors and power directors just aren't equipped to handle.

Call for your FREE 60 page PC power protection handbook!

Now there's an Uninterruptible Power Supply (UPS) to suit any budget. **Back-UPS®** are perfect protection for LAN servers, personal computers, phone/fax systems, POS equipment, or any other device that can go down when the power does. If lightning is a concern, Back-UPS are even **backed by a $25,000 insurance policy** against surge damage to your equipment (see details).

So don't wait for the inevitable power problem to rob your business. Protect your productivity with Back-UPS, available where quality computer products are sold.

APC Back-UPS provide instantaneous battery power during power disturbances, so your data and hardware are safe!

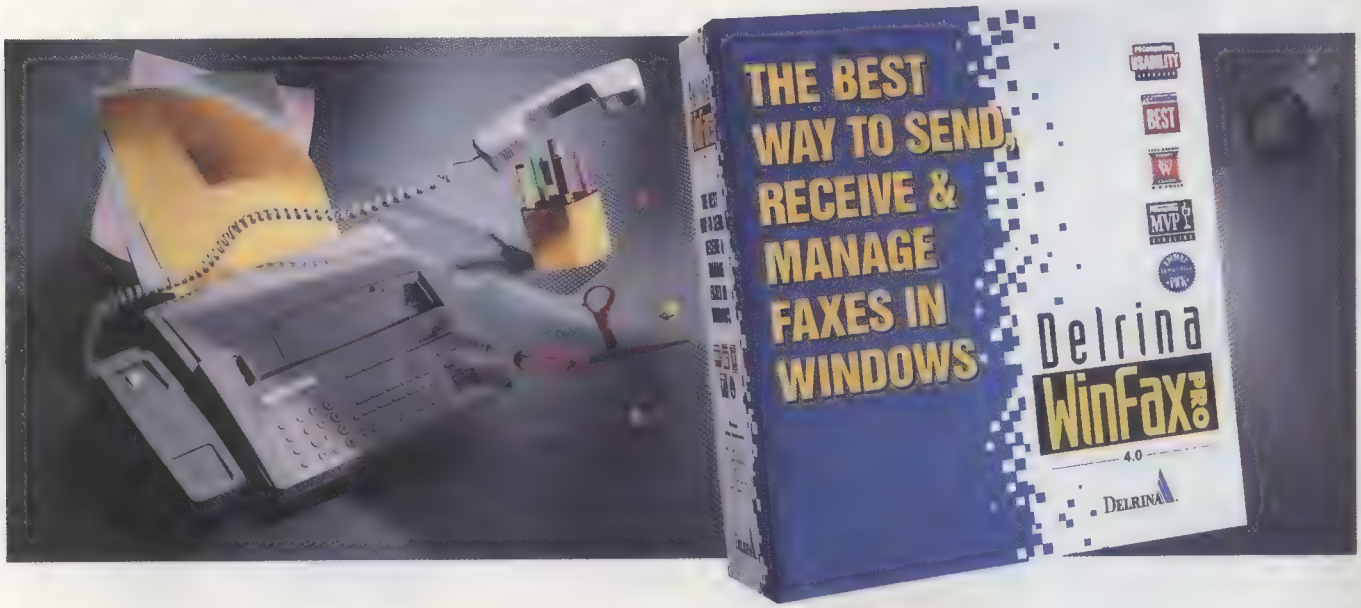
APC™
AMERICAN POWER CONVERSION
800-800-4APC, dept. E7

Local phone and fax for; **Germany** - Fax: 089.950.51 66 **United Kingdom** - Fax: 81.667.1947, **France** - NoVert: 05.09.24.07

© 1993 Trademarks are property of their respective owners. * Suggested list price.

Circle 116 on reader service card.

Introducing Delrina WinFax PRO™ 4.0. You'll wonder how you ever faxed without it.



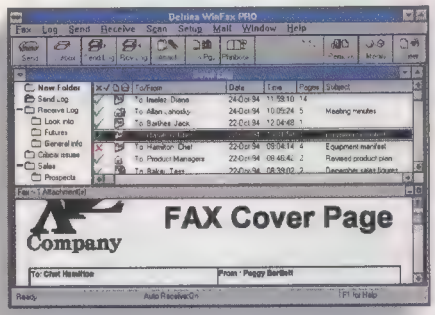
Meet the fastest, easiest, most convenient way ever to handle all your faxing – new Delrina WinFax PRO™ 4.0, the latest version of the best-selling fax software in the world. The only one that combines the advanced faxing features you need with astonishing new ease and usability.

"The best fax package there is."

That's what *PC/Computing* said about version 3.0. And now we've made it even better.

Starting with the revolutionary new streamlined interface that makes it simpler than ever to do anything you'd do with a fax machine, and a lot more. Like sending faxes directly from within any Windows application as easily as you'd print. Or organizing sent and received faxes in convenient folders. Or converting faxes into word processing documents with OCR.

There's added convenience with dozens of ready-to-use cover pages. Fax phonebooks that are drag-and-drop simple. And improved fax annotation tools that even let you add your signature.



Based on extensive usability testing, the new customizable interface includes folders for organizing sent and received faxes.

Don't try this with a fax machine.

Imagine faxing, not just an image of a document, but the actual file itself*, so it's ready to be used in an application. Imagine sending a single document that is automatically faxed to some people and e-mailed to others.

Now imagine you're on the road, and WinFax PRO automatically forwards faxes to you. Or lets you retrieve faxes sent to your regular fax number*. And there's more.

Get new Delrina WinFax PRO 4.0 today and put faxing where it really belongs – on your PC. Call now for information or to upgrade from WinFax PRO or WinFax LITE™. Or see your local dealer to upgrade immediately.

DELRINA
1-800-268-6082

WinFax, WinFax PRO, WinFax LITE and Delrina are trademarks of Delrina (Canada) Corporation. All other product names are trademarks of their respective owners. © 1994 Delrina (Canada) Corporation. All rights reserved.
*Requires Class 1 modem

Circle 167 on reader service card.

Don't Wait for Windows

Stealth 64 Provides Non-Stop Performance in Windows, CAD and Games.

Non-Stop Graphics

Suffering from sluggish graphics performance? Tired of seeing the hourglass appear on your screen and seemingly never go away? Then get the fastest. The Stealth 64 graphics adapter provides screaming acceleration in the most demanding Windows applications without sacrificing performance in DOS and game environments.

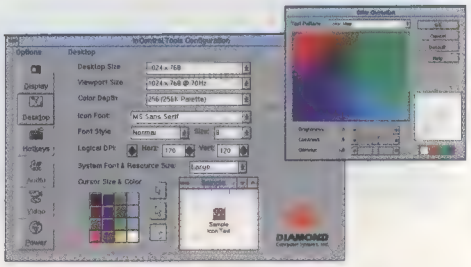
Powerful Features

- 64-bit graphics processor (S3 964)
- 43 million Winmarks in WinBench 4.0 (1024x768x256 colors on Intel P54C)
- 24-bit color at 1152x864 resolution
- Flicker-free, 120 Hz refresh rates
- 2MB VRAM and 4MB versions
- PCI and VESA bus compatible
- InControl Tools™ Windows productivity software included free

Instant Productivity

Diamond's powerful menu-driven software utility, InControl Tools, offers maximum flexibility and control under Windows.

- Virtual desktop with real-time pan and zoom
- Launch applications with a single keystroke
- Color calibration for display/printer matching
- Energy Star™ power saving features
- Pre-set and custom monitor setup for resolution, color and refresh rates



Guaranteed Excellence

Diamond's products have received more than 50 worldwide awards in the past two years. So when you purchase a Diamond graphics card, you know that you are buying award-winning excellence with a guarantee to back it.

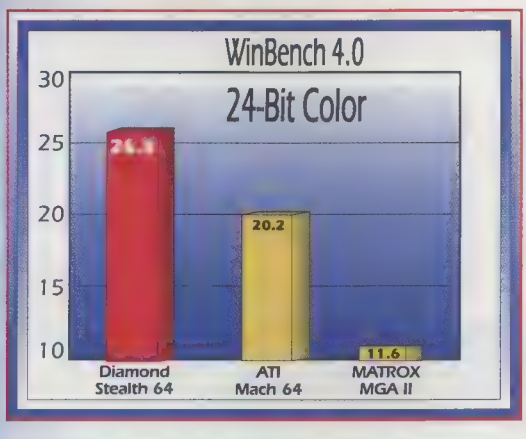
Stealth 64 carries a five-year parts and labor warranty and phone-in technical assistance is available six days a week.

Call Now

For more on the Stealth 64 or where to buy, call our fax-on-demand service at

1-800-380-0030

WINDOWS



GAMES & DOS

DIAMOND
Computer Systems, Inc.

Accelerating in Graphics and Multimedia

Performance tests conducted by Diamond Computer Systems, Inc. using Ziff-Davis's WinBench Version 4.0 on a Pentium 66mhz PCI system at 800x600x16M LF with 256k cache, 8MB RAM, SmartDrive 2048, and DOS 6.2. The Stealth 64 was configured with 2MB VRAM using driver release v1.03. The ATI Graphics Pro Turbo (Mach 64) was configured with 2MB VRAM using driver release v1.00. The Matrox MGA II Ultima Plus was configured with 2MB VRAM using driver release v1.32. All trade names referenced are the service mark, trademark, or registered trademarks of the respective manufacturers. Diamond reserves the right to change specifications without notice. Copyright © 1994 Diamond Computer Systems, Inc. 1130 East Arques Avenue, Sunnyvale, CA 94086, 408-736-2000, Fax: 408-730-5750. ST64 AD 110

Circle 168 on reader service card.

Mail BY PHONE, FAX, NET & POST:
Mosaic Musings • A Different Creature • Beta Fraud

One Good Node Deserves . . .

As a follow-up to Preston Gralla's Internet front-ends article in your April issue, I would appreciate a piece on what it means to be an Internet node. For example, if I were starting my own small business, how could I use Mosaic to set up an Internet node of my own? What's involved in doing this? What are the costs?

NATHANIEL HEKMAN
HEKNAT49@CALVIN.EDU

YOU ASKED FOR IT. Turn to "Untangling the World Wide Web" on page 113 of New! this month, and read Gralla's review of Mosaic, specifically the Filebox information on HTTP and HTML. **RS**

User Unfriendly

Brian Livingston did a good job describing the Internet ("The Mother of All Networks"), as long as your readers only use Windows. The Internet, however, is not a PC application, nor is it a commercial site like America Online or Prodigy that *must* create a user-friendly interface. The Net is a different creature entirely, and to expect the same level of user friendliness is absurd. If your readers can navigate DOS, they can navigate the Internet, right? Livingston, with his security concerns and comments on special software requirements, has done nothing more than instill an unfounded fear in the heart of every Internet wanna-be.

KEVIN HAMELIN
HAMELIN@FACIL.UMASS.EDU

FOR MANY OF OUR readers, the Internet is like a newly established national park, and they want to experience its beauty. What right have we to deny them well-crafted, safe trails into its depths? **JM**

Give Me a Break

April's "Coming Soon" sidebar (page 18) had me rolling my eyes, especially the opening line: "A 66MHz 486 system doesn't cut it anymore." Give me a break! I'm a small-business owner, and here's my perspective: I just paid off a 286 machine that cost $2,000 new; now, three and a half years later, it's worth less than $300. I also have a 486 running at 50MHz, which is amazingly fast. Now I read that my new machine is actually obsolete and that I should buy a Pentium machine. Personally, I'll stick with my 286 and 486 machines—I don't need software that can't run on these machines.

JEAN-PAUL TERTOCHA
WARRENSBURG, ILLINOIS

Right on Target

Ed Bott's April column, "Three Boring (But Smart) Reasons to Buy a CD-ROM," (page 20) was right on target. The Photo CD route for capturing high-quality original color graphics beats any desktop scanner I've seen, and the conversions are quite accurate.

Lots of us have 35mm camera gear and nice libraries of 35mm negatives. Now we can take our favorite negs to the shop to be put on disc, pop in the CD at home, load the editing software, and forget that we ever heard of a darkroom. It's also a treat to install a big, new program and see the files whistle by on the way to the hard drive. Two other advantages: A good sound card/CD combo gives you a SCSI controller for free, and it will play your favorite background music while you sweat over that dull spreadsheet.

DOUG SWANK
WALTHAM, MASSACHUSETTS

It's All Greek to Us

Your magazine continues to promote program revisions that verge on being fraudulent. Beta testing is a failure. Perhaps it is time for Gamma and Delta testing.

JOHN D. BALDWIN
EL PASO, TEXAS

SEND YOUR THOUGHTS TO Mail, *PC Computing*, 950 Tower Lane, 19th Floor, Foster City, CA 94404; fax us at (415) 578-7029; contact us via the Internet (76000.21@compuserve.com) or CompuServe (76000,21); or log on to PC Contact to post a public message (see page 228 for instructions). Letters must be signed and include a daytime phone number. All letters become the property of *PC Computing* and will be edited for length and clarity.

You can't sleep. You can't call room service. At least now you can get all your faxes.

Now you can get all your faxes whenever and wherever you travel. When someone wants to send you a fax, they simply send it to your Delrina Fax MailBox™ — using your own personal 800 fax number which we provide.

To instantly retrieve faxes with a PC or laptop simply use Delrina WinFax PRO™ 4.0 and a fax modem. Or just call your 800 number and enter your password to receive them via fax machine. If you have a pager, we'll notify you the instant you get a fax. Order today and we'll give you your first fifty faxed pages free.*

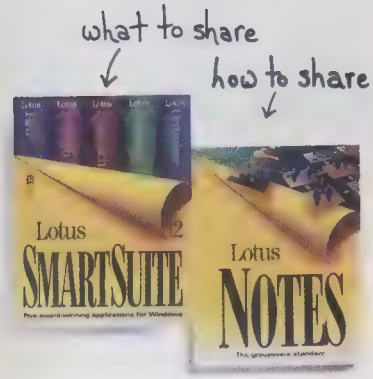
DELRINA
FAX MAILBOX
1-800-563-0043

*Requires 6 months of continued usage. © 1994 Delrina Fax MailBox and Delrina Communication Services are trademarks of Delrina (Seattle) Corporation. WinFax PRO is a trademark and Delrina is a registered trademark of Delrina (Canada) Corporation.

Circle 226 on reader service card.

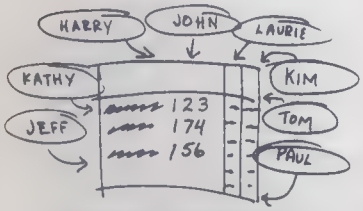
O.K., you've got your own personal vision. And this other guy, he's got his own personal vision. And so does everyone else in your workgroup.

Well, we've got these five software products that work like one and let you and your colleagues and co-workers and people you haven't ever even met do the same. Hey, find the right way to work together, there's no telling what you can do.



Even though sometimes it seems like you're in it alone, you know that you rely on the people around you and that ultimately nothing gets done without teamwork. So it makes sense that your software should help this process, not stand in the way.

That's why Lotus® SmartSuite® is designed for workgroups, not just individuals. SmartSuite is five Windows™ applications–1-2-3,® Ami Pro® word processor, Approach® database, Organizer™ personal information manager and Freelance Graphics®–fully integrated to work together, and enabled with powerful workgroup features to help co-workers do the same.



Version Manager technology lets many people work on the same document. Add Notes and they can do it at the same time.

For starters, each application shares a consistent look and feel. Everything works the way you expect it to, so if you've learned one application, you won't spend a lot of time learning the others.

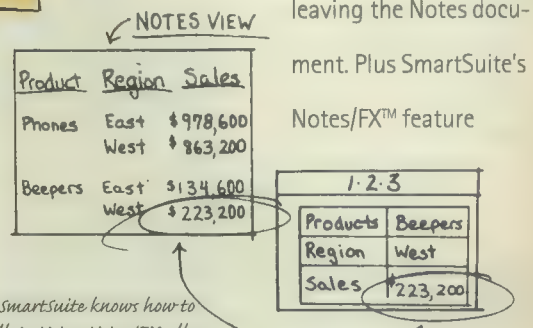
Smarter than the other suites

SmartSuite has many productivity features you just can't get anywhere else. Like Collect and Copy which lets you take multiple data ranges from any number of 1-2-3 spreadsheets and bring them into an Ami Pro document with a single click, setting up a live OLE link at the same time.

Lotus SmartSuite moves beyond integrating applications to integrating workgroups through built-in technologies like Version Manager™ which lets workgroup members work on

*$299 promotional price available while supplies last. **In Canada call 1-800-GO-LOTUS. Prices may vary. ©1994 Lotus Development Corporation, 55 Cambridge Parkway, Cambridge, MA 02142. All rights reserved. Lotus, Working Together, 1-2-3,

Now you can harness the power of SmartSuite's individual applications from within Notes, using 1-2-3's power to crunch numbers, Ami Pro's facility with words or Freelance Graphics' presentation capabilities – without leaving the Notes document. Plus SmartSuite's Notes/FX™ feature automates the exchange of information between the desktop apps and Lotus Notes. The bottom line is a better level of communication – more complete and more accurate than ever before.



SmartSuite knows how to talk to Notes. Notes/FX allows a field-level exchange between SmartSuite apps and Notes.

the same file concurrently, adding their insight without creating confusion.

Notes takes it to the next level

And to really experience the power of Working Together,® combine SmartSuite with Notes,® the groundbreaking groupware from Lotus. Right now almost 750,000 people in more than 3,000 companies are using Notes to access, track and share data in ways never before possible.

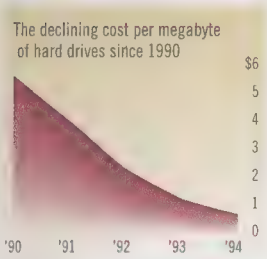
Look into SmartSuite. A SmartSuite upgrade costs **$299.*** Just call **1-800-TRADE-UP, ext. 9698.**** The time you save will be your own.

Lotus
Working Together®

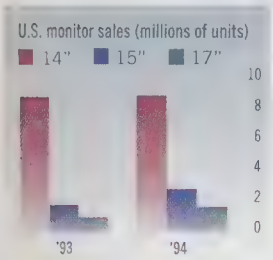
Ami Pro, Freelance Graphics, Approach, SmartSuite and Lotus Notes are registered trademarks and Version Manager, Notes/FX and Organizer are trademarks of Lotus Development Corporation. Windows is a trademark of Microsoft Corporation.

Pulse

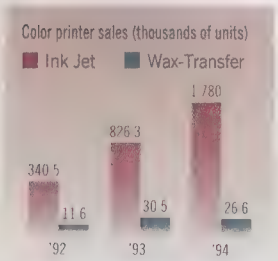
Faster Windows Video, Big Cheap Disks, New Font



More Bytes for Buck: Street prices for the most popular sizes of Winchester drives have plummeted, and there's no end to this trend in sight.



Big Picture: 14-inch monitors still dominate. But the overall market is growing, and 15- and 17-inch monitors account for most of the 1.5 million in increased unit sales.



Color of Money: In the coming years, expect wax-transfer printers to get squeezed out by ink jets at the low end and solid ink jet printers at the high end.

SAVE THE PLANET

How Green Is Your PC?

Even if you don't have a pet spotted owl, it doesn't mean you're not concerned about the environment. After all, you purchased an Energy Star PC both for peace of mind and sanctity of bottom line—the EPA says your system will save you $160 to $190 annually. But unless your green system also packs a green monitor, these estimates are about as valuable as a can of spraypaint in Singapore.

Green monitors can save you up to 110 watts when idle. Green PCs, on the other hand, crank down just 10 watts from full power to sleep. Here's a word problem for you: If your PC is on 24 hours a day, but you don't use it for 18 of those hours, and your utility charges 10 cents per kilowatt-hour (rather high), how much would you save? A mere 54 cents a month. Not even enough to buy a double latté and not nearly on par with the EPA's whopping savings claims.

Energy Savings Before Your Eyes: Monitor-maker Nanao figures a green 17-inch monitor can save you up to $79 a year.

Your best bet for saving the world and your wallet is a green monitor, and new offerings like AST Research's ASTVision SVGA draw only 75 watts or less even in full use—compared to about 120 watts for a regular monitor. Nanao USA figures you can save $66 of the $105 it would cost annually to power its $650 15-inch F340iW monitor full-time. Definitely worth it if you're about to buy a new monitor, but it will take ten or more years to recoup the purchase price in energy savings.

So, while it's hard to justify replacing your current monitor solely because the new versions are more miserly with the kilowatt-hours, the next new monitor you buy should be green. In the meantime, get a surge suppressor-cum-monitor-regulator for less than $100. We've tried several of these timeout

UPDATES Best Bets and Bargains

POSTSCRIPT . . .
Coming this month from Adobe: Adobe Type Manager 3.0, a $60 new version with network font storage, 30 typefaces, and multiple master fonts. Call Adobe Systems at (415) 961-4400.
Reader Service No. 652

. . . VS. TRUETYPE
ElseWare's $129 Font Works takes a different spin on fonts. Its low-overhead Infinifont font collection squeezes into a couple of megs of disk space. Contact ElseWare at (206) 448-9600.
Reader Service No. 653

PUSH-BUTTON COLOR
Upgrade your HP ink jet printers using HP's ColorSmart; devilish color problems like muddy printouts will be solved. Contact Hewlett-Packard at (303) 353-7650.
Reader Service No. 651

WINDOWS 3.11, NOT FOR WORKGROUPS
Update your two-year-old Windows 3.1 now. Download the eight core Windows 3.11 files from CompuServe: Type GO CIS:MSL and then download WW0981.EXE.

PHOTOGRAPH BY GIAMPIERO BENVENUTI

devices with great results. Typical is the Power Miser from Tripp-Lite (312-329-1601) which turns down your monitor after a user-selectable 5 to 60 minutes of keyboard inactivity and provides surge suppression for three additional devices.

Some Energy Star PCs have a drawback—before hooking up a green fax or voicemail server, check that it wakes up from sleep mode when there's an incoming call. The EPA's first spec calls for wake-up only from mouse and keyboard activity, not from the COM ports or modems.

Cache Check Your average 486DX doesn't gain much from a 256K memory cache—compared to a standard 128K cache. But zippy Pentiums can easily outrun today's standard 60-to-80-nanosecond memory. Don't get a machine with less than 256K of cache. You need bigger buffers with Enhanced IDE hard drives, too. Graphics-heavy and video-rich disk-to-memory transfers need at least 256K—and 512K is better.

CD-ROM on the Road No one has yet figured out how to fit a 5¼-inch CD-ROM drive into a notebook, but Toshiba, Texas Instruments, AMS, and others have taken a step toward multimedia portables by including 16-bit stereo sound chips and stereo output jacks in their portables. Add a CD-ROM player in various ways via a docking station or through a parallel port. In the case of the AMS SoundWave portable and TI's new TravelMate 4000M, there's a "slice" to attach beneath the notebook (see "Price or Pizzazz? You Can't Lose," New! page 72). More solutions are coming from peripheral makers.

Sound All Around

No matter how good your current sound board is, a new technology from SRS Labs will improve it. The digital sound retrieval system (SRS) adds depth to any sound that's hard to describe but easy to hear. The first new board incorporating SRS technology is Media Vision's Premium 3-D. There's a retrofit, too—NuReality's Vivid 3D (see Technolust, page 306).

Media Vision / (510) 770-8600 / $199 / *Reader Service No. 655*
NuReality / (800) 501-8086 / $99 / *Reader Service No. 663*

What's It Cost?

We asked several vendors to price multimedia systems with the following specs: 66MHz 486DX2, 8MB of RAM, 340MB hard drive, Sound Blaster sound card, double-speed CD-ROM drive, accelerated video, 15-inch monitor, and speakers. Here are their best prices.

Company	Best Price
MidWest Micro *(800) 572-8844*	$1,958
Quantex Microsystems *(800) 288-0566*	$1,964
Insight Direct *(800) 755-3875*	$1,999
Gateway 2000 *(800) 846-2000*	$2,055
Dell Computer *(800) 289-3355*	$2,297

Reader Service Numbers: Midwest Micro *659;* Quantex *656;* Insight Direct *657;* Gateway 2000 *658;* Dell *660*

RADAR WHAT'S NEXT, THE FIRST BANK OF INTUIT?

Noisy Notebooks Be silent no more! The newest notebooks have built-in sound and microphones.

Global Positioning System Big Brother's satellites pinpoint your location and your destination. Mapping software gets you there.

Compression MS-DOS loses DoubleSpace, loses face. 1-to-1 storage is for wimps.

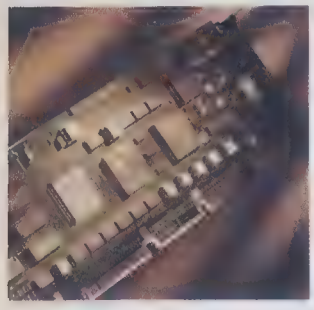
Quicken Groupies say: You'll be one of us soon.

TV-Top Computers Do you really want to run a spreadsheet from the couch?

Fly-by-Wire: Boeing's new 777 will have modem jacks on the seat phones.

CD-ROM Software Catalogs Instant gratification: Read about it, buy it online. A new way to go broke quick.

What's on the scope? If it's near or moving toward the middle, pay attention to it. If it's moving off the screen, forget about it for now. Your time is too valuable.



Real Moving Pictures—Cheap

Does Microsoft's Video for Windows 1.1 look more like a flip-book than a movie on your system? We've found a cure for your ills. Check out VideoLogic's 928Movie. This ISA or VLB board revs Windows 33 percent faster than other accelerator boards—it's one of the few we've seen that improves video playback noticeably. It eliminated annoying flickers from CD-ROM sequences that had bugged us before, and it smoothed out pixels beautifully. And if SuperMac's Cinepak video playback doesn't improve, blame VFW 1.1. For a threefold improvement in playback, download VFW11A-.EXE from CompuServe's MSL library. The half-hour download gives you Video for Windows 1.1a.

VideoLogic / (617) 494-0530 / $349 without audio; $449 with audio / *Circle Reader Service No. 661*

Contributors to Pulse: Cyndy Bates, Kyla K. Carlson, Mike Hogan, Raphael Needleman, Richard Schwerin.
Edited by Matthew J. Lake

Honey, Didya Leave the Computer On?

Not just another **pretty interface**, the new Windows shell on AST's latest Advantage PCs can field all your incoming messages whenever you roam. Leave your Energy Star Advantage turned on in sleep mode and its AST Works shell will handle **multibox** voice mail, fax, and e-mail duties for you—for only **pennies** a week in electricity. Then have it forward your faxes and voice messages to any number at regular intervals. You can designate up to 99 voice mailboxes and, in states where Caller ID is permitted, leave private messages for important customers. And service providers who charge by the hour can even time-stamp incoming and outgoing phone calls for easy tracking of billable customer expenses.

AST Research / (800) 876-4278 / *Circle Reader Service No. 636*

SOFTWARE SALESWIRE

NOVELL'S **NETWARE** HITS THE BESTSELLER LIST

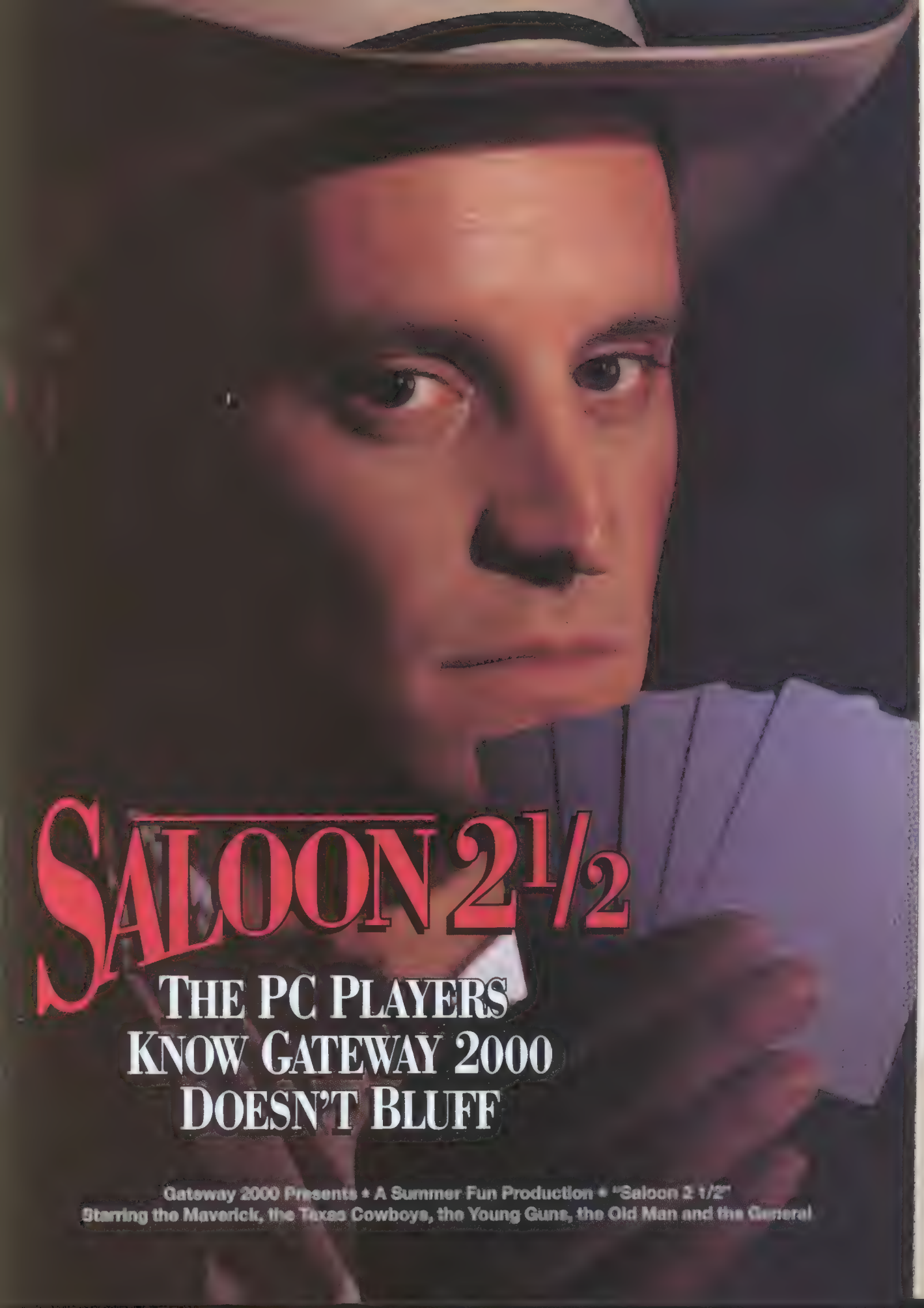
BUSINESS APPLICATIONS	Vendor	Price	Comments	MARCH	APRIL
Word 6.0 for Windows	Microsoft	$495	Customizable toolbar fits like a glove.	2	1
Office 4.*x* for Windows	Microsoft	$750	Sweetening the pot with new Access 2.0.	10	2
Excel 5.0 for Windows	Microsoft	$495	Handy subtotal feature sorts by category.	1	3
ProComm Plus 2.*x*	Datastorm	$129	Two error-correcting protocols built-in.	7	4
WordPerfect 6.0 for DOS	WordPerfect	$495	Includes flexible, automated mail merge.	13	5

UTILITIES	Vendor	Price	Comments	MARCH	APRIL
MS-DOS 6.0	Microsoft	$78	Optimize your hard disk with Defrag.	1	1
Windows 3.1	Microsoft	$80	Drag-and-drop simplicity.	2	2
QEMM 7	Quarterdeck	$99	Great memory management.	3	3
NetWare 3.*x* (5-user license)	Novell	$1,095	Features read-after-write verification.	10	4
UnInstaller 2.0 for Windows	MicroHelp	$70	Remove Windows applications at will.	7	5

PERSONAL PRODUCTIVITY	Vendor	Price	Comments	MARCH	APRIL
Quicken 7 for DOS	Intuit/ChipSoft	$69	Automatic logbook of transactions.	5	1
Quicken 3.0	Intuit/ChipSoft	$69	Feature-rich financial calendar.	2	2
TurboTax 1993	Intuit/Chipsoft	$69	New Deduction Finder foils the IRS.	1	3
Resume Writer for Windows	Expert	$15	Includes calendar/contact manager.	-	4
New Print Shop	Broderbund	$30	Proprietary file format.	-	5

Software Saleswire is compiled by G. Meier, Inc. once each month after gathering ranked-order sales information supplied by the following software industry sources. 800-Software, ABCO Distributors, American Software, Babbages, Baker & Taylor Software, CompUSA, Computability, Computer Discount Warehouse, Corporate Software, Dustin Discount Software, Egghead Discount Software, Electronics Boutique, Gate/FA, GTSI, Ingram-Micro, Josha Distributing, Kenfil, Liuski Int'l, Mensel, Multiple Zones, Navarre, PC Connection, Software Resource, Software Spectrum, Software, Etc. and Waldensoftware. They represent sales through tens of thousands of resellers and more than $6 billion of software sales. A weighting system is applied to each entry based on three factors: the entry's position in the individual chart, the power of the contributing source based on annual gross sales, and the relative strength of a source in a given category of software. All prices are suggested retail and are subject to change.

PHOTOGRAPH BY ARNOLD TIOSEJO


SALOON 2 1/2
THE PC PLAYERS
KNOW GATEWAY 2000
DOESN'T BLUFF
Gateway 2000 Presents • A Summer Fun Production • "Saloon 2 1/2"
Starring the Maverick, the Texas Cowboys, the Young Guns, the Old Man and the General

WE'RE RAISING

HANDBOOK 486
Now Standard With:
Fax/Modem
Leather Case
Extra Battery
External Floppy
COLORBOOK
Dual Scan Color
Starting at $1999
4SX-33
Intel SX-33
4MB RAM
340MB Hard Drive
2X CD-ROM
1MB Video
14" SVGA Monitor
MS Works
$1299
FAMILY PC
Intel DX2-66
8MB RAM
340MB Hard Drive
2X CD-ROM
Sound & Speakers
2400/9600 Modem
CD Software Kit
$1999
P5-60
Intel Pentium 60
8MB RAM
540MB Hard Drive
2X CD-ROM
1MB PCI Graphics
15" CrystalScan
MS Office Pro
$2499

GATEWAY 2000
P5-90 BEST BUY
Intel Pentium 90
8MB RAM
540MB Hard Drive
2X CD-ROM
2MB PCI Graphics
15" CrystalScan
MS Office Pro
$2999

THE STAKES

CD-ROM
Standard

3-Year
Warranty
Standard

Microsoft
Office Pro

AND YOU'RE THE WINNER!

Hold on to your hat, pardner. Gateway 2000® is raisin' the stakes again! Now a double-speed CD-ROM drive is standard on every Gateway desktop PC, *and* every desktop system comes with a three-year limited parts warranty — *including* Gateway monitors! It's one of the strongest warranties in the industry!

On top of that, many Gateway desktops now include Microsoft® Office Pro™ with all of Microsoft's most popular business applications: Word, Excel, PowerPoint,® Access™ and Office Manager. It's powerful software to suit powerful systems. When you bet on Gateway, you're the winner with a hand that is unbeatable in the industry.

Speaking of the PC industry, if you've been hangin' around the PC Saloon for long, you'll recognize that this Gateway ad is a sequel to one that ran way back in the summer of 1990. Taking our cue from Hollywood, we reckoned if "Saloon" was a good ad, we might as well do "Saloon 2 1/2." What was surprising about lookin' back was seeing how many things have stayed the same.

The players around the industry poker table have changed some, but the game hasn't. Gateway's strategy is to deal you a royal flush of value: high-performance, high-quality PCs at the very best prices with old-fashioned, good service. Same as always. And although Gateway has become a Fortune 500 firm, we still think like a small, maverick company from the South Dakota frontier.

Yesirree, when you have a hankerin' for a PC, just holler. We'll give you the best deal in all the land.

intel inside

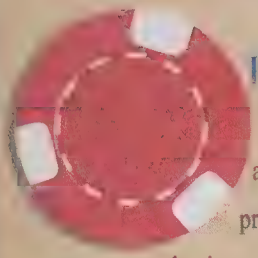
GATEWAY2000

"You've got a friend in the business."®

800-846-2062

HAS AN UNBEATABLE HAN

WHEN GATEWAY 2000 DEALS,



PENTIUMS ARE STRAIGHT ACES

Gateway 2000® Pentium-based systems are the best cards you can hold in terms of price and performance. Starting at only $2,499, they're some of the fastest PCs in the west, hands down. In a price-performance showdown with other CPUs, the 90MHz Pentium outguns them all. You just can't find more horsepower for the money.

Based on the Intel® Pentium processor, all P5 models include a PCI local bus and an enhanced PCI/IDE controller allowing your hard drive to transfer data up to twice as fast as non-enhanced systems.

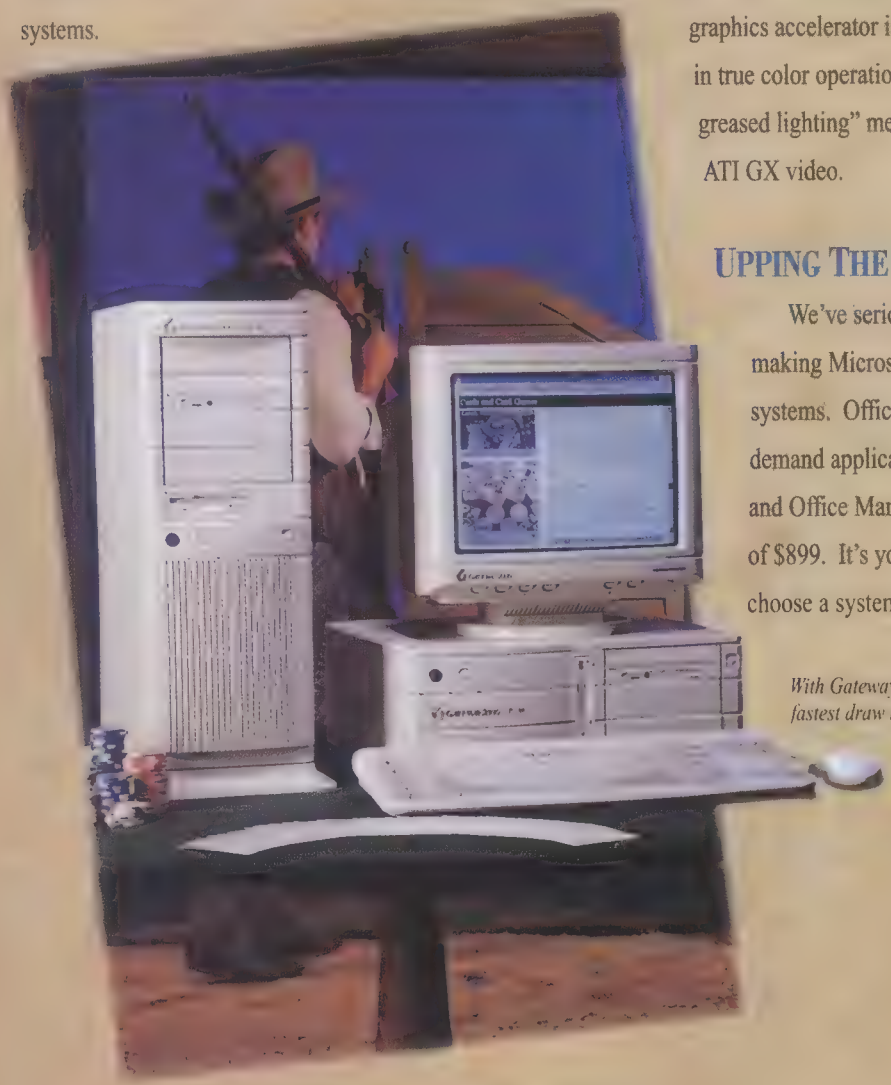
Gateway's ace of spades is the P5-90 tower model, which includes most everything a PC-poke dreams of, for $3,999. (In the 1990 "Saloon" ad, our most advanced system was a 25MHz 486 with 4MB RAM and a 150MB hard drive for $5,295!)

QUICK DRAW

New this month, the P5-90 tower has an ATI GX video card for a lightning-fast draw. The ATI GX video card uses the Mach 64 graphics accelerator — one of the first and fastest 64-bit accelerators on the market — and delivers over *100 million Winmarks* of video performance in Winbench 3.11 tests. This graphics accelerator is *twice as fast* as other 64-bit accelerators in true color operation. You'll understand what "faster than greased lighting" means when you try the P5-90 tower with ATI GX video.

UPPING THE SOFTWARE ANTE

We've seriously upped the ante in the industry by making Microsoft Office Pro standard on many of our systems. Office Pro includes Microsoft's most in-demand applications: Word, Excel, PowerPoint, Access and Office Manager, all latest versions, with a retail value of $899. It's yours at no additional charge when you choose a system configuration with Office Pro standard.



With Gateway 2000's Pentium-based systems, you can be the fastest draw in the West ... or anywhere!

intel inside
pentium
PROCESSOR

YOU DRAW POWER CARDS

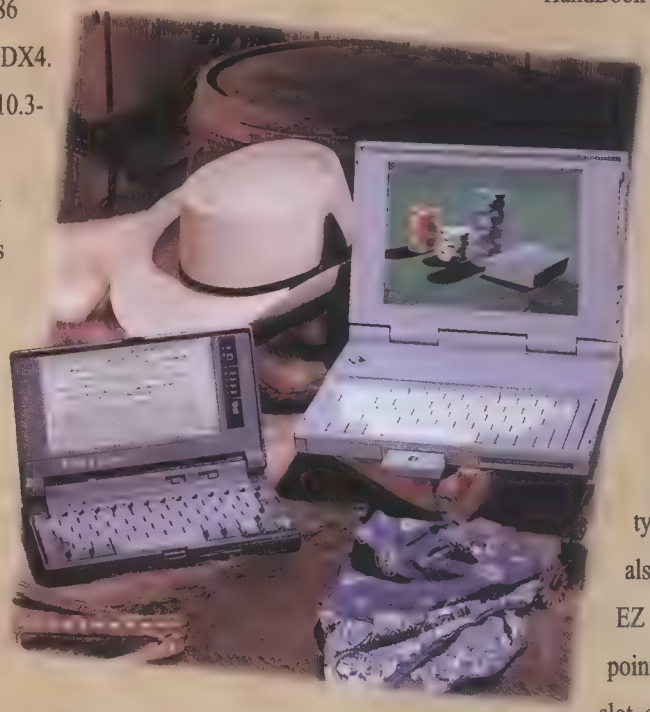
A PAIR OF PORTABLES

GATEWAY2000 COLORBOOK

If you know when to hold 'em, you'll hang onto the ColorBook™ from Gateway 2000. It's a rare card in the portable game that gives you outstanding color and desktop performance at a monochrome portable price.

The ColorBook comes in four 486 models, including the latest 75MHz DX4. Three ColorBook models include a 10.3-inch dual-scan screen, which is the biggest color portable display on the market. You won't find a screen this big, this affordable, anywhere else.

Weighing less than 5.7 pounds, the ColorBook is one of the thinnest color portables around. The ColorBook comes with a powerful Intel SL Enhanced processor — 486SX, DX2 or DX4 — and gives you 256 brilliant colors in VGA mode. You'll also appreciate its built-in trackball, large hard drive, simultaneous video support, excellent battery life, two PCMCIA Type II slots (or one Type III), and suspend/resume feature.



GATEWAY2000 HANDBOOK 486

The wild card in our hand is the HandBook® 486. While people usually don't get hooked on computers, this little beauty is so compelling that use of it may be habit-forming. And now the HandBook comes with even more features standard. You get an external diskette drive, a PCMCIA fax/modem, two batteries and a dandy leather carrying case — all included. Once you get your hands on a HandBook, you never want to put it down!

The HandBook 486 is the lightest Intel-based 486 portable available today. It weighs less than three pounds and measures roughly 10 x 6 inches. The HandBook's power and portability make it the perfect traveling companion.

HandBook models include a 25MHz 486SX and a 40MHz DX2 based on Intel's SL Enhanced energy-efficient processors. The HandBook has a bright, backlit VGA screen and a comfortable, touch-type keyboard. You'll also like the HandBook's EZ Point™ integrated pointer, PCMCIA Type II slot, and long-lasting nickel metal hydride battery. You can "hot swap" with the HandBook, too — change batteries or peripherals while the PC is running without rebooting the system or losing any data.

Deal yourself a great hand with the HandBook 486 or the ColorBook from Gateway 2000.

intel inside

GATEWAY2000

"You've got a friend in the business."®

800 - 846 - 2062

BLAZING FAMILY VALUES

FRONTIER FAMILY PC

With a Gateway 2000® Family PC,™ you and your family can explore the frontier of the wild west, or just about any subject, from the comfort of your home.

The Family PC is a fully equipped multimedia system including a fast CD-ROM drive so you can run the best programs and games with sound, pictures, animation and video. With its high-quality sound card and speakers, the Family PC lets you play music CDs with great stereo sound. The sound card also lets you hear audio clips or record audio.

You get a fax/modem with the Family PC, too, and all the communication software you need to connect with other computer users all over the world. With your modem, you can tie into computer bulletin boards such as CompuServe,® Prodigy,® America Online® and Internet where you'll find forums and information by the gigabyte.

The Family PC also includes great software. You get four outstanding Microsoft titles, plus the Corel Photo CD which is standard on all Gateway desktop systems:

- ♥ Microsoft Works,™ Multimedia Edition — gives you a word processor, spreadsheet, database and much more!
- ♠ Microsoft Encarta 1994 Multimedia Encyclopedia — includes the complete text of the 29-volume Funk & Wagnall's New Encyclopedia, and much, much more!
- ♦ Microsoft Money™ — the complete personal financial management package.
- ♣ Microsoft Golf — terrific entertainment for the whole family!
- ♥ Corel Professional Photos CD Sampler — gives you tools to view Photo CD images.

Nobody in the industry deals you a software hand as strong as this one!

Gateway 2000's Family PC includes everything you need for multimedia and communication uses.

GATEWAY2000 FamilyPC

intel inside

STRONGER PRODUCT SUPPORT

WANTED: 3-YEAR WARRANTY

You asked for it. You got it. Now Gateway's high-quality desktop systems come with one of the strongest warranties in the industry. All Gateway 2000 desktop PCs are backed by a three-year limited warranty on parts and a one-year limited warranty on labor. The new three-year limited parts warranty *includes Gateway monitors*, an unusual provision in the industry, giving you one of the best support deals around.

Our portables still come with a standard one-year limited warranty on both parts and labor, with a special extended warranty available only at the time of purchase for an additional $100.

For details on our new warranty and all of our service and support policies, please call or write for a free written copy.

MORE STANDARD SERVICES

As a Gateway customer you also receive a 30-day money-back guarantee and toll-free technical support. On-site service is available in most U.S. locations, and may be provided without charge during the warranty if our technicians determine it is necessary.

A Gateway BBS membership also comes with every system. With the purchase of a modem, you get Triton's CoSession™ Host at no additional charge. This remote diagnostics software enables Gateway technicians to remotely work on your PC, with your permission, over the telephone.

PAYMENT OPTIONS

Gateway accepts most major credit cards and C.O.D. terms, with net 30-day terms and leasing options available to qualified commercial customers. You can also apply for the Gateway 2000 DuoLine™ MasterCard® Card, issued by Dial National Bank, Des Moines, Iowa.

ACROSS THE BORDERS

Gateway 2000 also makes it easy for friends in Canada and Puerto Rico to buy Gateway systems with toll-free telephone service to both countries. See the back pages of this ad for special 800 numbers. Plus, Canadian and Puerto Rican customers get award-winning technical support and CSA approvals. On-site service is available in some Canadian and Puerto Rican locations, and our international shipping rates are among the most competitive in the industry. Give us a call!

Printed on recycled paper with soy inks

Gateway 2000 is a corporate sponsor of GLOBAL RE-LEAF

energy EPA POLLUTION PREVENTER

GATEWAY 2000

"You've got a friend in the business."®

8 0 0 - 4 0 - 2 0 6 2

"You've got a friend in the business" slogan are registered trademarks, and ColorBook, DuoLine, Family PC, F-Z Point and gistered trademarks of Intel Corporation. All other brands and product names are trademarks or registered trademarks of their ithout notice or obligation. Prices do not include shipping or applicable sales tax.

4SX-33*/4DX-33*

- Intel 33MHz 486SX or DX CPU
- 4MB RAM
- 340MB 13ms IDE Hard Drive
- Local Bus Graphics with 1MB
- ◆ Double-Speed CD-ROM
- 3.5" Diskette Drive
- 14" Color SVGA Monitor
- Mini Desktop Case
- 5 16-Bit ISA Slots
- 101-Key Keyboard & Mouse
- MS-DOS 6.2 & WFW 3.11
- ◆ MS Works Multimedia Edition 3.0
- ◆ 3-Year Limited Parts Warranty

4SX-33 $1299
4DX-33 $1499

4SX-33* FAMILY PC™

- Intel 33MHz 486SX CPU
- 4MB RAM
- 340MB 13ms IDE Hard Drive
- Local Bus Graphics with 1MB
- ◆ Double-Speed CD-ROM, 16-Bit Sound Card & Speakers
- 2400/9600 Data/Fax Modem
- 3.5" Diskette Drive
- 14" Color SVGA Monitor
- Mini Desktop Case
- 5 16-Bit ISA Slots
- 101-Key Keyboard & Mouse
- MS-DOS 6.2 & WFW 3.11
- ◆ MS Works, Encarta, Money,™ Golf & Corel Photo CD
- ◆ 3-Year Limited Parts Warranty

$1499

4DX2-66* FAMILY PC

- Intel 66MHz 486DX2 CPU
- 8MB RAM, 128KB Cache
- 340MB 13ms IDE Hard Drive
- Local Bus Graphics with 1MB
- ◆ Double-Speed CD-ROM, 16-Bit Sound Card & Speakers
- 2400/9600 Data/Fax Modem
- 3.5" Diskette Drive
- 14" Color SVGA Monitor
- Mini Desktop Case
- 5 16-Bit ISA Slots
- 101-Key Keyboard & Mouse
- MS-DOS 6.2 & WFW 3.11
- ◆ MS Works, Encarta, Money & Corel Photo CD
- ◆ 3-Year Limited Parts Warranty

$1999

P4D-66*

- Intel 66MHz 486DX2 CPU
- 8MB RAM, 128KB Cache
- 540MB 13ms IDE Hard Drive
- PCI Enhanced IDE Interface
- PCI Local Bus Graphics with 1MB
- ◆ Double-Speed CD-ROM
- 3.5" Diskette Drive
- 15" Color CrystalScan® Monitor
- Desktop Case
- 4 ISA, 2 PCI & 1 PCI/ISA Slots
- AnyKey® Keyboard & Mouse
- MS-DOS 6.2 & WFW 3.11
- ◆ MS Office Pro™
- ◆ 3-Year Limited Parts Warranty

$2299

P5-60

- Intel 60MHz Pentium™ CPU
- 8MB RAM, 256KB Cache
- 540MB 13ms IDE Hard Drive
- PCI Enhanced IDE Interface
- PCI Local Bus Graphics with 1MB
- ◆ Double-Speed CD-ROM
- 3.5" Diskette Drive
- 15" Color CrystalScan Monitor
- Desktop Case
- 4 ISA, 2 PCI & 1 PCI/ISA Slots
- AnyKey Keyboard & Mouse
- MS-DOS 6.2 & WFW 3.11
- ◆ MS Office Pro
- ◆ 3-Year Limited Parts Warranty

$2499

P5-66

- Intel 66MHz Pentium CPU
- 8MB RAM, 256KB Cache
- 540MB 13ms IDE Hard Drive
- PCI Enhanced IDE Interface
- PCI Local Bus Graphics with 2MB
- ◆ Double-Speed CD-ROM
- 3.5" Diskette Drive
- 15" Color CrystalScan Monitor
- Desktop Case
- 4 ISA, 2 PCI & 1 PCI/ISA Slots
- AnyKey Keyboard & Mouse
- MS-DOS 6.2 & WFW 3.11
- ◆ MS Office Pro
- ◆ 3-Year Limited Parts Warranty

$2799

P5-90 BEST BUY

- Intel 90MHz Pentium CPU
- 8MB RAM, 256KB Cache
- 540MB 13ms IDE Hard Drive
- PCI Enhanced IDE Interface
- PCI Local Bus Graphics with 2MB
- ◆ Double-Speed CD-ROM
- 3.5" Diskette Drive
- 15" Color CrystalScan Monitor
- Desktop Case
- 4 ISA, 2 PCI & 1 PCI/ISA Slots
- AnyKey Keyboard & Mouse
- MS-DOS 6.2 & WFW 3.11
- ◆ MS Office Pro
- ◆ 3-Year Limited Parts Warranty

$2999

P5-90 TOWER

- Intel 90MHz Pentium CPU
- 16MB RAM, 256KB Cache
- 540MB 13ms IDE Hard Drive
- PCI Enhanced IDE Interface
- ◆ ATI Mach 64 Graphics on PCI Local Bus with 2MB VRAM
- ◆ Double-Speed CD-ROM
- 16-Bit Sound Blaster-Compatible Sound Card & Speakers
- 3.5" Diskette Drive
- 17" Color CrystalScan 1776LE
- Tower Case
- 4 ISA, 2 PCI & 1 PCI/ISA Slots
- AnyKey Keyboard & Mouse
- MS-DOS 6.2 & WFW 3.11
- ◆ MS Office Pro
- ◆ 3-Year Limited Parts Warranty

$3999

HANDBOOK® 486

- 2.94 Lbs., 9.75" x 5.9" x 1.6"
- SL Enhanced Intel® 486 or DX2 Processor
- 4MB or 8MB RAM (expands to 20MB)
- 80 to 130MB IDE Hard Drive
- ◆ External 3.5" Diskette Drive
- 7.9" Backlit VGA Display
- ◆ 2 NiMH Batteries & AC Pack
- Suspend/Resume Feature
- 1 PCMCIA Type II Slot
- EZ Point™ Integrated Pointer
- 78-Key Keyboard
- Parallel, Serial & PS/2 Ports
- ◆ Leather Carrying Case
- MS Works for Windows™ 3.0
- MS-DOS® 6.2, WFW 3.11 & Serial Transfer Cable

◆ We're raising the stakes with better features!

HANDBOOK 486SX-25

25MHz 486SX, 4MB RAM, 80MB Hard Drive, ◆ 96/24 Fax/Modem

$1799

HANDBOOK DX2-40

40MHz DX2, 8MB RAM, 130MB Hard Drive, ◆ TelePath™ Fax/Modem

$2499

COLORBOOK™

- 5.7 Lbs., 11.7" x 8.5" x 1.77"
- SL Enhanced Intel 486, DX2 or DX4 Processor
- 4MB or 8MB RAM (expands to 8, 12 or 20MB)
- 3.5" Diskette Drive and Removable 120 to 340MB IDE Drive
- 10.3" or 9.4" VGA Dual-Scan STN Color Display
- NiMH Battery & AC Pack
- Suspend/Resume Feature
- 2 PCMCIA Type II Slots (1 Type III)
- Integrated Trackball (2 buttons)
- 85-Key Keyboard
- Parallel, Serial, PS/2® & VGA Ports
- MS Works for Windows 3.0
- MS-DOS 6.2 & WFW 3.11

COLORBOOK DX2-40

40MHz DX2, 4MB RAM, 250MB Hard Drive, 10.3" LCD

$2499

COLORBOOK DX2-50

50MHz DX2, 8MB RAM, 250MB Hard Drive, 10.3" LCD

$2999

COLORBOOK DX4-75

75MHz DX4, 8MB RAM, 340MB Hard Drive, 10.3" LCD, MS Office Pro, TelePath Fax/Modem, Case

$3799

Toll free from Canada 800-846-3609

Toll free from Puerto Rico 800-846-3613

GATEWAY2000

"You've got a friend in the business."®

800-846-2062

intel inside

*Intel Verified: for the Pentium™ OverDrive™ Processor

N. Sioux City, SD 57049-2000 • Phone 605-232-2000 • TDD 800-846-1778 • Fax 605-232-2023 • FaxBack 605-232-2561
Hours: 7am-10pm Weekdays, 9am-4pm Saturdays(CDT)

GREAT DEALS ON EXTRAS!

You're sure to get a great deal on all kinds of peripherals and software, sold only with the purchase of a system.

MULTIMEDIA

Basic Audio Multimedia Kit

Here's everything you need to add multimedia to a Gateway PC.

- Gateway 2000 16-bit CD-quality sound card, compatible with Sound Blaster™ cards, with MIDI/game port, mic in, stereo line in/out
- 2 Labtec® CS-180 speakers
- Corel Professional Photos CD Sampler

$109 *(with system purchase)*

Wavetable Audio Multimedia Kit

Once you've heard wavetable audio, basic audio will never do!

- Ensoniq Soundscape 16-bit wavetable sound card, MT-32 and FM mode, General MIDI, Sound Blaster and AdLib compatible
- New Altec Lansing ACS-31 three-piece speaker system
- MidiSoft Sound Explorer and Time Warner's Aegis software
- Corel Professional Photos CD Sampler

$279 *(with system purchase)*

Altec Lansing ACS-31 Speakers

A Gateway exclusive from Altec Lansing: a three-piece speaker set at a two-piece price. Two 3-inch free-standing speakers crank out up to five watts per channel while the subwoofer can deliver 15 watts of heart-pounding bass. For the price, you won't find anything better! **$119**

Multimedia Software Starter Pack

Great complement to any multimedia system. You get nearly $700 worth of software for only $139! Package includes Mad Dog McCree, Tuneland, Mayo Clinic Family Health Book, Better Homes and Gardens Cookbook, Sitting on the Farm, Sam & Max Hit the Road, Mavis Beacon Teaches Typing, Chess Master 3000, U.S. Atlas and World Atlas. You also get a compact disk cleaner and 20-disk storage rack. **$139**

COMMUNICATIONS & STORAGE

TelePath™ II Fax/Modem

Internal fax/modem, 14,400bps modem, V.32bis, with 14,400bps fax capability. Includes CommWorks™ data and fax communication software, CoSession™ Host remote diagnostics, plus a CompuServe® trial membership. **$129**

Colorado Memory Systems® TBU

250MB internal tape backup unit copies up to 9.5MB per minute. Comes with MS Windows™ and DOS software, one tape and cable. **$149**

MONITORS

CrystalScan® 17-Inch Monitor

Non-interlaced color monitor with intelligent multi-scanning analog color display capable of 1280 x 1024 resolutionin non-interlaced mode, .26 dot pitch.
Upgrade from a 14-inch CrystalScan® monitor **$395**
Upgrade from a 15-inch CrystalScan® monitor **$335**
(Prices good only for upgrades at the time of system purchase.)

NETWORKING

Intel EtherExpress™

A 16-bit Ethernet adapter from a world leader in networking. **$105** Twisted Pair or BNC.

Ethernet Adapter from 3Com®

Manufactured by 3Com for Gateway. **$105** Twisted Pair. **$125** BNC.

Token Ring

IBM® 16-bit ISA Token Ring card. **$429**

PRINTERS

Epson® Stylus™ 800 Ink Jet Printer

Get the look of a laser at a dot matrix price with the Stylus 800. Prints 150 characters per second at 360dpi — fast and quiet! **$289**

Epson ActionLaser 1500 Laser Printer

Get professional-quality documents fast — six pages per minute, at 300 x 300dpi. Comes with 14 resident fonts and 1MB memory expandable to 5MB. Parallel cable included. **$669**

Call for other printer options.

PORTABLES

Peripherals and upgrades available only with a Gateway portable purchase.

PCMCIA Cards

- TelePath 14,400 fax/modem. **$249** *(Also in X-Jack version, same price)*
- 9,600/2,400 fax/modem. **$149**
- Ethernet adapter. **$149**
- Token Ring adapter. **$449**
- HandBook VGA adapter. **$229**

Other Accessories

- 2.2Ah NiMH batteries. **$89**
- HandBook 3.5" external floppy. **$99**
- ColorBook carrying case. **$49**
- HandBook leather carrying case. **$55**
- Extended VIP warranty — we ship a replacement to you within 24 hours during warranty. Point of sale only. **$100**

Call the Gateway 2000® special component add-ons division at 800-846-2080 for our complete line of extras for Gateway customers.

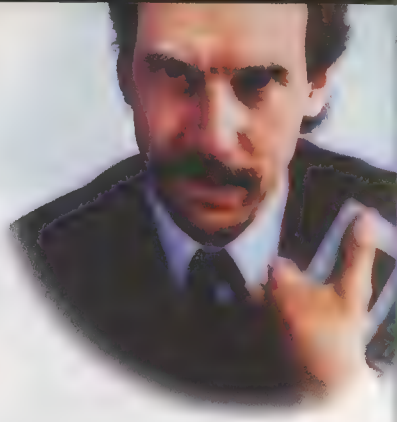
GATEWAY2000

"You've got a friend in the business."®

800-846-2062

© 1994 Gateway 2000, Inc. Gateway 2000, AnyKey, CrystalScan, HandBook, black-and-white spot design, "G" logo and "You've got a friend in the business" slogan are registered trademarks, and ColorBook, DuoLine, Family PC, EZ Point and TelePath are trademarks of Gateway 2000, Inc. The Intel Inside Logo, Intel, Pentium and OverDrive are trademarks or registered trademarks of Intel Corporation All other brands and product names are trademarks or registered trademarks of their respective companies. All prices and configurations are subject to change without notice or obligation. Prices do not include shipping or applicable sales tax.

Paul Somerson



Voice Vote

Thud. Or maybe splat. Apple's Newton has hit the ground, and not exactly running. Its model 110 upgrade sports a flip-up plastic cover, which comes in handy to shield it from dust on dealers' shelves. But wait—aren't we now in some gooey-eyed Age of Convergence? Shouldn't Apple's pioneering little PDA be in everyone's pocket? Did it really stumble because its handwriting recognition turned out to be just so much frail **MOONBEAM** technology? No way. Saying Newton had just a few problems is like saying Clinton has just a few character flaws.

It (Newton, that is) tried to be all things to all people. It was slow, overpriced, and oversized. Its screen was dim and unreadable. It needed wires to communicate with the outside world, and OK, the handwriting recognition thing doomed it, but only after *Doonesbury* turned this interesting but **UNDERCOOKED** technology into a national laughingstock.

The real reason Newton fizzled is that—despite all of the **CHIRPY PROMISES** in its early ads—the best interface company out there forgot that real people just don't find it natural to communicate by writing with plastic pens on glass.

Until the interface improves, PDAs won't catch on as computers that will someday let wireless phones plug in. Right now they have a much better shot the **OTHER WAY AROUND.** Like BellSouth's Simon, designed by IBM. It's a cellular phone with built-in send/receive wireless fax and e-mail, and a modest computer stuffed inside. A small window pops up a tiny "predictive keyboard" that's smart enough to know which few letters an onboard spelling dictionary thinks you're likely to type next.

However, Simon's a bit bulky. And tapping in commands even on its slick minikeyboard just isn't natural enough. All these handhelds **CRY OUT FOR** voice recognition. It's coming. And IBM's been doing a lot of the heavy lifting here. Its discrete speech recognition system can handle 20,000 words, but . . . nobody . . . talks . . . one . . . word . . . at . . . a . . . time (unless they're heavily sedated or starring in a Sylvester Stallone movie). Its continuous speech recognition software can handle about a thousand words, which isn't bad.

Or get this: Zexel USA has plopped a satellite-based navigation gizmo (using Rockwell's Navstar Global Positioning System) into the dashboard of an **OLDSMOBILE 88.** Using a synthesized male voice, this gadget guides you flawlessly to your destination. Sounds great—until you get to the part that says the user simply punches in the destination on a small keypad.

Sure, drivers are supposed to enter such info before they start. But considering that they commonly eat, drink, smoke, phone, shave, and apply makeup while streaking down the highway, **IMAGINE THE MAYHEM** that will result when these hunt-and-peckers look down and start tapping away at 70 mph. Again, a decent voice recognition system is the clear answer.

For the industry to win big here, we need the kind of Enterprise computing that Captain Kirk relied on to communicate and calculate. Until video takes off, when it comes to truly natural interfaces, voice gets my vote. Watch for a special upcoming *PC Computing* technology report on this topic.

PHOTOGRAPH BY JAMES McGOON

33-MHZ
50-MHZ
486 pow•e r•ful
af•ford•able STARTING AT **$745**
con•ser•va•tion
graph•i•cal ACCELERATED VIDEO

thanks to the new ALR Express, the whole relationship between price and performance has just been redefined. Powered by your choice of fast 486SX and 486DX2 microprocessors and fortified with accelerated graphics, the ALR Express flies through Windows™ without hesitation. Even the lowest priced models run at a quick 33-MHz. Yet all this performance is available for less than $750!
A perfect home office PC, network node, or general business system, the Express is an ideal match for today's sophisticated desktop publishing/wordprocessing software and graphics oriented spreadsheet programs. Built for long-lasting performance, it offers a single chip upgrade path to higher levels of 486 processing and Pentium™ Overdrive™ technology.

Best of all, the Express is built by ALR. With a roster of recent awards that includes PC World's "Best Buy", 1994, "CADalyst's "Highly Recommended," PC magazines "Editor's Choice," BYTE's "Best of Spring Comdex, 1993," and Le Monde Informatique's "Product of the Year, 1993" ALR systems have become an established favorite among PC specialists and users worldwide.

So come on, find out what all the critics have been raving about. Visit your nearest authorized ALR reseller, and take a look at the new ALR Express and our complete family of award-winning systems and multimedia solutions. For the reseller nearest you call today:

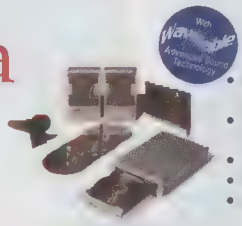
1•800•444•4ALR

ALR can be reached on Compuserve--GO ALR INC

How do you teach an old or new PC new tricks?

mul•ti•me•dia

Install an ALR Digital Express Multimedia Kit! Featuring the same type of commitment to performance and value that's found in our Express systems, this kit will add state-of-the-art multimedia capabilities to your old PC or your new ALR system.



- Double Speed CD-ROM Drive
- 16-bit Wavetable Stereo Soundcard with DSP
- Speakers
- Software
- Manuals and Cables

ALR®
Advanced Logic Research, Inc.

9401 Jeronimo,
Irvine CA 92718
TEL: (714) 581-6770
FAX: (714) 581-9240

System shown with optional monitor and equipment

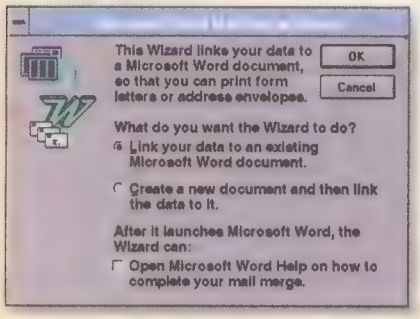
Circle 142 on reader service card.

YOU'LL LIKE NEW MICROSOFT ACCESS 2.0 WHETHER YOU'RE LOOKING FOR A *database* OR A

DATAB

*Rebate offer: Licensed users of Microsoft Access and Microsoft Office 4.0 or later qualify for $30 rebate upon acquiring Microsoft Access 2.0 ($129 upgrade SRP). Licensed users of Office Professional, Office Standard, Word, Microsoft Excel, PowerPoint®, or Micro
Office Professional includes Microsoft Excel, Word, PowerPoint, Microsoft Access, and a workstation license for Mail (Mail server and software acquired separately). In the 50 United States, call (800) 370-8996, Dept. CN3. For info only: In Canada, call (800) 563-90

They say you can't be all things to all people. But one database comes really close: new Microsoft Access® database management system 2.0. The first relational database for everyone.



Mail Merge Wizard works directly with Microsoft Word to place your selected data into the document of your choice.

If you need a database with a small "d," you've found it. Microsoft Access is easy to use. So easy, you can create tables, make forms, and print reports right from the start.

Want that capital "D" variety? Then fasten your seat belts.

Microsoft Access packs speed, power, and control. Helping database developers quickly create sophisticated database applications.

The fact is, Microsoft Access has something for everyone. Or more precisely, a lot for everyone.

Like new Rushmore™ query optimization, a technology that makes queries lightning fast. So you get your data quicker.

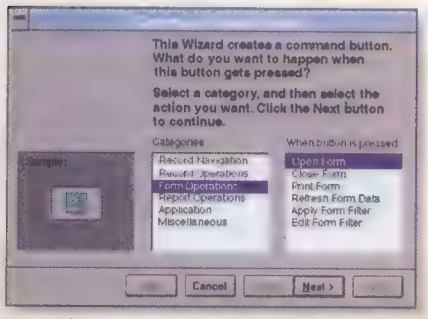
Like Table Wizard, a feature that takes you step-by-step through table setup and design.

Like Query Wizard, a helpful assistant who walks you through the steps of finding your data.

In fact, thanks to IntelliSense™ technology, a Microsoft Office feature, many of your routine tasks will be automatic. And your complex tasks become much easier.

Of course, when you're ready to venture beyond the basics, Microsoft Access is, too. With tools that help you develop powerful database applications. Including engine-level validation guaranteed to keep your data safe.

And a programming language featuring an event model for added control and flexibility similar to Microsoft®

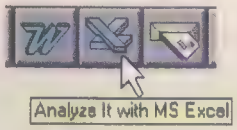


Add fully functional buttons to a form using the Button Wizard. Microsoft Access does all the work of writing the code behind the button.

Visual Basic® programming system.

Microsoft Access even makes it easy to tap into any current database you have, from Paradox® to Microsoft SQL Server.

You can also count on unlimited no-charge product support by phone (toll charges may apply).



With OfficeLinks, send data directly to Microsoft Excel using the Analyze It toolbar button.

And for as little as $99* for an upgrade or $359* for the Office Professional upgrade, Microsoft Access couldn't be more, well, accessible. For a reseller's name, or to order, call 800-370-8996, Dept. CN3.

Microsoft Office

qualify for $40 rebate upon acquiring Office Professional 4.3 ($399 upgrade SRP). Plus applicable sales tax. Reseller prices may vary. Offer good until August 31, 1994 and only in the 50 United States. © 1994 Microsoft Corp. All rights reserved. Microsoft the 50 United States & Canada, call your local Microsoft subsidiary or (206) 936-8661. Microsoft, Microsoft Access, PowerPoint, Visual Basic and the Windows logo are registered trademarks and IntelliSense and Rushmore are trademarks of Microsoft Corp

Ed Bott

Dummy's Curse

I am not a dummy. The fact that you're reading this magazine means you probably aren't, either. But increasingly, we're being surrounded by technological know-nothings. One of last year's best-selling computer books was Dan Gookin's *DOS for Dummies*, a brilliant piece of writing and a sad commentary on how difficult it is to use PCs, DOS, Windows, and just about any application you can name.

Faster than you can say *Rocky V* or *Police Academy VI*, the supersuccessful *DOS for Dummies* has unleashed a flood of me-too how-to books. They're mindless, yes, but these cheap knock-offs are mostly harmless.

Unfortunately, another series of stupid sequels isn't so benign. A new generation of Windows software, filled with dummy-inspired features, is threatening to drag us non-dummies headfirst into techno never-never land. Some represent the bright side of usability testing, with interface innovations that are good for experts and novices alike. But others are graceless, productivity-sapping, user-hostile kludges guaranteed to offend anyone with an IQ that's higher than room temperature.

How do you spot dummy software? Here are some telltale signs:

Meaningless Manuals Dummies never RTFM, so some software developers have begun converting documentation to dummies-style comic books. These move at a glacial pace, one shuffling step at a time, through every obvious feature. If you want the technical reference manual—you know, the one that has the answers to the really hard questions—have your credit card ready, because these days it costs extra.

Witless Wizards These step-by-step helpers were a good idea when they first appeared, and they still make sense for complicated features you don't use every day. But beware of developers that populate their programs with breathless text and dopey drawings, especially the anthropomorphic variety that look like they just crawled out of *The Smurfs in Silicon Valley*. We non-dummies prefer our wizards dressed in business suits.

Helpless Icons An advanced Unclear on the Concept Award goes to a recent dummies book that includes explanations of all the icons and buttons used in popular Windows programs. Wait a minute! Aren't icons supposed to be intuitive shortcuts? Software developers can take their pick of icon help systems, but if they expect us non-dummies to buy, they'd better pick one. If they really want to earn our undying respect, they can make it easy to eliminate the icon bar, too.

Dummy Defaults The new conventional wisdom says that if you offer a dummy a choice, he or she will pick the wrong option every time. The answer, unfortunately, is to eliminate choices. That explains why hard-coded directories are making an unwelcome comeback in installation routines and why some programs insist on replacing crucial files in your Windows and System directories without asking.

'Yes, I'm sure, dammit!' You know the drill. A dialog box asks whether you're sure you want to delete a file. Yes, you're sure. Then another dialog box asks if you're really, really sure. Yes, you're really, really sure. Any day now, you can expect to see a dummy-inspired File Manager replacement that demands you sign a release—and promise not to call tech support—before it will delete a file.

Expect to see a **DUMMY-INSPIRED** *File Manager replacement that insists you sign a* **LEGAL RELEASE** *and promise not to call* **TECH SUPPORT** *before it will delete a file.*

Killer Serials Even the densest of dummies won't buy copy-protected software these days. So software developers have devised a subtler form of torture: Print a serial number on a floppy disk, then at some point during the installation process ask you to type that number into a dialog box. Invariably, of course, the serial number is on the disk that's in the drive at the time. This technique can't possibly deter any but the most feeble-minded software pirates, but it instantly lowers my expectations.

Licenses in Legalese Dummies never read license agreements, but you and I do. So software companies that expect us to take these agreements seriously had better write them in plain English. We should demand $10 off the retail price for each weasel word like *hereinafter, whereto,* or *aforementioned* that appears in a license agreement—assuming you can find the agreement, that is. After I slit the shrink-wrap on one multimedia program last year, I decided not to install it. Why? Because bold letters on the outside of the media envelope warned me not to open it unless I agreed to the terms of the license agreement. Trouble was, the dummy developers had placed the license agreement *inside* the envelope!

Maybe dummy software is the inevitable result now that $999 PCs and $49 applications are sitting on kitchen tables throughout North America. Usability should be one of the design goals for any PC product. But it's not OK to make a product more usable by simply slicing away annoyingly complex features and eliminating choices. Those of us who use computers for business have a right to expect more.

PHOTOGRAPH BY JAMES McGOON

PC Magazine, PC/Computing, PC World, Computer Shopper & Windows Sources All Agree...

The ZEOS® Pantera™ Is The #1 Pentium PC.

We could fill this page with self-indulgent comments about how technically superior our Pentium processor-based systems are, how they perform far better than the competition, how great a value they are–and so much more. But why listen to us, the manufacturer, when top editorial experts at three leading publications said the same thing–and far more eloquently.

PERFORMANCE:

"At the top is the new ZEOS Pantera-66, a Pentium-66 that recorded the fastest benchmark results ever to come out of the PC World Test Center."
PC World, Best Buy, June 1994

"In terms of performance, the Pantera-66 left little to be desired ...this machine scored high consistently and laid claim to no low scores whatsoever."
PC Magazine, Editors' Choice, April 12, 1994

VALUE:

"ZEOS Pantera-66 combines quality features, good price, and high performance..."
PC Magazine, Editors' Choice

"A standout in speed and value...we suggest you spend your money on this machine–it offers the best value of any system we tested...this is a deal you simply can't pass up."
PC/Computing, BEST

THE EXPERTS CONCLUDE:

"...one system stands out from the rest: the ZEOS Pantera."
Windows Sources, Experts' Pick, June 1994

"...the fastest system we've ever tested ...number one power desktop Best Buy."
PC World, Best Buy

"A rocket... scorching performance."
PC/Computing, BEST, May 1994

"...the most desirable computer in the group."
Computer Shopper, Top Choice, April 1994

"...there's no doubt which machine you should choose: ZEOS's Pantera-66."
PC/Computing, BEST

OK, so maybe we were a little indulgent, but that's what the experts said–and they all agree that the ZEOS Pantera is the top choice. Make it your choice. Call a ZEOS Systems Consultant today.

PC MAGAZINE EDITORS' CHOICE, PC WORLD, BEST BUY & COMPUTER SHOPPER'S "TOP CHOICE"

April 12, 1994 — June 1994

PENTIUM-60 ..... $3295
PENTIUM-66 ..... $3395
PENTIUM-90 ..... $3595

- Intel 60MHz, 66MHz or 90MHz Pentium CPU
- 16MB RAM, 256K SRAM cache
- 528MB local bus IDE hard drive, 256K cache
- 2X CD-ROM drive, 3.5" 1.44MB floppy disk drive
- Diamond Stealth 64/PCI local bus SVGA color graphics card with 2MB VRAM
- ZEOS 15" 1024 x 768 NI SVGA color monitor, .28mm
- 2 high-speed (16550) serial ports, 1 enhanced parallel port
- 3 PCI slots, 5 ISA slots
- Integrated business audio
- On-board SCSI socket
- Flash BIOS
- 10-bay vertical case with two cooling fans
- 101-key space-saving keyboard
- MS-DOS 6.2, Windows for Workgroups 3.11, Microsoft Mouse, choice of Lotus application

PC/COMPUTING BEST & WINDOWS SOURCES EXPERTS' PICK MULTIMEDIA SYSTEM

May 1994 — June 1994

PENTIUM-60 ..... $3843
PENTIUM-66 ..... $3943
PENTIUM-90 ..... $4143

The above system plus:

- 16-bit sound card
- Amplified stereo speakers
- 17" 1280 x 1024 NI SVGA color monitor, .28mm, upgrade

CALL NOW TOLL FREE
800-554-5218
24 HOURS A DAY

Fax Orders: 800-362-1205 or 612-362-1205. Phone Orders: Government: 800-245-2449, Outside U.S. and Canada: 612-362-1212. Purchase Orders, MasterCard, VISA, Am Ex, Discover, Z-Card,® COD and affordable leasing programs. Open 24 Hours a Day, 365 Days a Year!

ZEOS

Purchase orders are subject to approval. Business leasing programs available. Lease prices based on a 36-month lease, 10% purchase option. All prices, specifications and availability are subject to change without notice, call to confirm these and warranty details. Prices do not include shipping. All products and company names are trademarks or registered trademarks of their respective holders. Intel Inside and Pentium are trademarks of Intel Corporation in the USA and other countries. ZEOS is a registered trademark; Z-Card and Computers Now! are registered servicemarks. Pantera is a trademark of ZEOS International Ltd. © 1994 ZEOS International Ltd., 1301 Industrial Blvd., Minneapolis, MN 55413 USA. ZEOS is a publicly traded company (NASDAQ symbol: ZEOS). PEN PCC-9407

Circle 265 on reader service card.

The ZEOS® Pantera™: Simply Can't

EXPERTS NAME THE ZEOS PANTERA #1

"Rocket fast performance and a great price make this our favorite Pentium of the lot," *PC/Computing* said.

Top computer experts at five leading publications agree that the ZEOS Pantera is the best Pentium-processor based system available.

The ZEOS Pantera has earned:

- *PC Magazine* Editors' Choice (April 12, 1994)
- *Computer Shopper* "top choice" (April 1994)
- *PC/Computing* BEST (May 1994)
- *PC World* Best Buy (June 1994)
- *Windows Sources* Experts' Pick (June 1994).

These prestigious awards all add up to one thing–ZEOS computers are your #1 choice.

Don't settle for less. The ZEOS Pantera has it all. *PC/Computing* concurs: "Hot performance, room for expandability, and a low price make this system our top choice."

POWER BEYOND POWER

"At the top is the new ZEOS Pantera-66, a Pentium-66 that recorded the fastest benchmark results ever to come out of the PC World Test Center," reported *PC World.*

PC Magazine said: "ZEOS Pantera-66 combines quality features, good price, and high performance.... A consistently above-average performer on all our benchmark tests...."

The ZEOS Pantera received the highest marks on many benchmark tests including the Graphics WinMark and Disk WinMark tests run by *PC Magazine.* Its Disk WinMark surpassed the next closest competitor by 35 percent!

What makes the Pantera fly at supersonic speeds? A ZEOS designed motherboard with exceptional features such as a hot new integrated PCI Local Bus IDE Controller (supporting up to four IDE devices) that, as *PC Magazine* said, "pushes disk access into new territory."

PENTIUM & 486 PANTERAS

Even better, we now incorporate the latest award-winning Pantera technology (including PCI) to our 486 PCs. The new 486 Panteras are the 486 answer to both the value-minded and power-hungry user. There's a package right for you, or we'll custom configure one to your exact needs!

The expanded Pantera line includes more processors–from a 486SX-25 to a DX4-100 all the way to a Pentium-90! These new, improved and even more affordable systems feature local bus IDE hard drives from 214MB to 1GB; memory from 4MB to 24MB; a new 64-bit video controller; 3 PCI slots (one contains our PCI local bus video card) in addition to 5 ISA slots; and on-board Fast SCSI-2 option. And all Pantera systems are 100% compatible with every major network operating system on the market.

yes It runs with NetWare

ALL THE EXTRAS INCLUDED

The best news: We give you all this at a marvelous price. There's no doubt about it. *PC/Computing* said: "We suggest you spend your money on this machine–it offers the best value of any system we tested." *Windows Sources* agrees: "ZEOS Pantera offers the best performance for the price."

The value doesn't stop with your purchase. You get the best service and support in the business. In fact, ZEOS has won more *PC Magazine* Readers' Choice for Service & Reliability awards than any other company–five in all. We were the first to provide 24-hour toll-free technical support–every day!

SERVICE & RELIABILITY PC READERS' CHOICE

ZEOS offers you all this and more. It's easy to see why the Pantera is the "number one power desktop Best Buy." It's the Editors' Choice. Make it your choice. As *PC/Computing* said, "there's no doubt which machine you should choose: ZEOS's Pantera...this is a deal you simply can't pass up." Call your ZEOS Systems Consultant now at 800-554-5218.

"This Is A Deal You Pass Up." —*PC/Computing* BEST, May 1994

PROCESSORS	PACKAGE 1	PACKAGE 2	PACKAGE 3	PACKAGE 4
486SX-33	**$1495** Lease $63/mo.	**$1795** Lease $65/mo.	**$2195** Lease $71/mo.	**$2795** Lease $101/mo.
486DX-33	**$1645** Lease $60/mo.	**$1945** Lease $70/mo.	**$2345** Lease $85/mo.	**$2945** Lease $107/mo.
486DX2-66	**$1795** Lease $65/mo.	**$2095** Lease $76/mo.	**$2495** Lease $90/mo.	**$3095** Lease $102/mo.
DX4-100	**$2095** Lease $76/mo.	**$2395** Lease $87/mo.	**$2795** Lease $101/mo.	**$3395** Lease $112/mo.
PENTIUM-66	**$2395** Lease $87/mo.	**$2695** Lease $98/mo.	**$3095** Lease $102/mo.	**$3695** Lease $122/mo.
PENTIUM-90	**$2595** Lease $94/mo.	**$2895** Lease $105/mo.	**$3295** Lease $109/mo.	**$3895** Lease $129/mo.
More processors available. Call for details.	■ 4MB RAM ■ 214MB local bus IDE hard drive w/32K cache ■ 3.5" 1.44MB floppy drive ■ 64-bit Windows-accelerated PCI local bus SVGA color graphics card with 1MB RAM ■ ZEOS 14" 1024 x 768 non-interlaced SVGA color monitor, .28mm dot pitch ■ Six-bay desktop case with two cooling fans ■ MS-DOS 6.2, Windows for Workgroups 3.11, Microsoft Mouse	■ 8MB RAM ■ 426MB local bus IDE hard drive w/128K cache ■ 2X CD-ROM drive, 3.5" 1.44MB floppy ■ 64-bit Windows-accelerated PCI local bus SVGA color graphics card with 1MB RAM ■ ZEOS 14" 1024 x 768 non-interlaced SVGA color monitor, .28mm dot pitch ■ Six-bay desktop case with two cooling fans ■ MS-DOS 6.2, Windows for Workgroups 3.11, Microsoft Mouse	■ 16MB RAM ■ 528MB local bus IDE hard drive w/256K cache ■ 2X CD-ROM drive, 3.5" 1.44MB floppy ■ 64-bit Windows-accelerated PCI local bus SVGA color graphics card with 1MB RAM ■ ZEOS 14" 1024 x 768 non-interlaced SVGA color monitor, .28mm dot pitch ■ Six-bay desktop case with two cooling fans ■ MS-DOS 6.2, Windows for Workgroups 3.11, Microsoft Mouse ■ Choice of Lotus Windows application	■ 24MB RAM ■ 1GB local bus IDE hard drive w/256K cache ■ 2X CD-ROM drive, 3.5" 1.44MB floppy ■ 64-bit Windows-accelerated PCI local bus SVGA color graphics card with 1MB RAM ■ ZEOS 14" 1024 x 768 non-interlaced SVGA color monitor, .28mm dot pitch ■ Six-bay desktop case with two cooling fans ■ MS-DOS 6.2, Windows for Workgroups 3.11, Microsoft Mouse ■ Choice of Lotus Windows application

STANDARD WITH EVERY ZEOS PANTERA® SYSTEM

- Genuine Intel Processor.
- PCI local bus color graphics card upgradable to 2MB.
- Two high-speed serial ports and one enhanced parallel port.
- Three PCI slots and five ISA slots.
- Optional on-board Fast SCSI-2 socket.
- Flash BIOS.
- 200 watt power supply with built-in surge suppressor. Switchable between 115/230V.
- ZEOS 101-key space-saving keyboard.
- FCC Certified Class B; UL Listed.
- Complete ZEOS Customer Satisfaction Package.

intel inside

PENTIUM EXTRAS:

- RAM expandable to 192MB.
- Integrated business audio.

486 EXTRAS:

- RAM expandable to 128MB.
- EPA Energy Star compliant.

FAVORITE OPTIONS

528MB TO 1GB HDD UPGRADE **$395**

1MB TO 2MB VIDEO RAM UPGRADE **$59**

DIAMOND STEALTH 64/PCI VIDEO CARD WITH 2MB VRAM **$249**

ZEOS 15" MONITOR UPGRADE
SVGA NI, 1024 x 768, flat screen **$95**

ZEOS 17" MONITOR UPGRADE
SVGA NI, 1280 x 1024 ..... **$495**

ADAPTEC 6360 SCSI CONTROLLER CHIP
For on-board SCSI. Includes drivers **$49**

14.4 BPS V.32 BIS MODEM WITH 14.4 BPS SEND/RECEIVE FAX **$139**

96/48/24 V.42 BIS SEND/RECEIVE FAX MODEM **$49**

INTERNAL TAPE BACKUP
80 to 250MB (with compression), includes backup software **$159**

10-BAY VERTICAL CASE **$95**

MULTIMEDIA UPGRADE
16-bit sound card. Stereo speakers **$148**

LOTUS SMARTSUITE UPGRADE
Five Windows applications in one box! **$299**

Many other affordable upgrades and options available. Call for details!

Fax Orders: 800-362-1205 or 612-362-1205. Phone Orders: Government: 800-245-2449, Outside U.S. and Canada: 612-362-1212. Purchase Orders, MasterCard, VISA, Am Ex, Discover, Z-Card™, COD and affordable leasing programs. Open 24 Hours a Day, 365 Days a Year!

CALL NOW TOLL FREE
800-554-5218

ZEOS INTERNATIONAL, LTD.

Purchase orders are subject to approval. Business leasing programs available. Lease prices based on a 36-month lease; 10% purchase option. All prices, specifications and availability are subject to change without notice; call to confirm these and warranty details. Prices do not include shipping. The Energy Star emblem does not represent EPA endorsement of any product or service. All products and company names are trademarks or registered trademarks of their respective holders. Intel Inside and Pentium are trademarks of Intel Corporation. ZEOS is a registered trademark; Z-Card and Computers Now! are registered servicemarks; Pantera is a trademark of ZEOS International Ltd. © 1994 ZEOS International Ltd., 1301 Industrial Blvd., Minneapolis, MN 55413 USA. ZEOS is a publicly traded company (NASDAQ symbol: ZEOS). PAN-PCC-9407

Circle 248 on reader service card.

John C. Dvorak

Digital Dander

It made my blood boil as I listened to a press briefing given by Northern Telecom regarding their high-end ATM "switch" that is being used in various tests and businesses around the world. This piece of equipment was designed to be used in phone systems to allow a new technology called ATM (asynchronous transfer method) to be employed for high-speed digital communications between your phone and mine. In a pig's eye! By the time they get around to universal implementation, something new and better will come along. They'll stop ATM and start on something new. So nothing gets done except here and there in various test markets.

This and other announcements get my dander up because the phone providers I use—namely U S West (I like to call them U S Worst) and Pacific Bell—cannot supply my house with an ISDN (integrated services digital network) connection. And U S West cannot locally provide the crude Switched 56 connection that should be a no-brainer.

So I'm watching this Northern Telecom guy talk about how Cleveland will connect to Los Angeles using ATM. What about San Francisco? What about the thousands of little cities around the country? When the phone companies were strictly regulated they were required to service remote areas. Now it seems they're not interested. There's not much profit in running a digital-ready line to Dungeness, Washington, for example. There are no financial institutions doing worldwide money trading there. In Cleveland you have the computer-intensive Progressive Corporation doing risk analysis for the nation's insurance carriers. To make their life easier, they'll get digital service. To hell with the crab-pot guy and all the families in Dungeness.

The little towns cannot be left out of the digital revolution just because the phone companies want to goof around with game delivery and set-top boxes for suburban Omaha. Yes, while U S West ignores its responsibilities to establish high-quality phone links to its area of responsibility, it's going to test market in Omaha a set-top box to be jointly developed with 3DO. U S West is not alone. Pacific Bell and the rest of these communications providers (they used to be called phone companies) are ignoring their primary responsibilities so they can goof around with multimedia, CD-ROMs, set-top boxes, cable TV, and all sorts of businesses that are hardly a benefit to the nation or to the states they serve. It's time they be reregulated.

I'm not complaining because I personally cannot get an ISDN channel after ten years of waiting. I suppose I can live with 28.8 Kbps for data transmission. I'll just never be able to do live video from desktop to desktop like they do in Santa Clara and nearby locations where the phone company perceives rich folk to be living. But when I discovered that Nynex can't get an ISDN line into *PC Magazine,* located at One Park Avenue in the dead center of New York City, then I began to wonder what the heck is going on. This is nothing less than a national security issue. Heck, you can get ISDN in most parts of newly developed Asia!

We need ISDN **TODAY** *. . . . The situation is becoming a* **CRISIS** *when you can* **GET ISDN** *in most parts of newly developed* **ASIA** *but not in many locales here in the* **U.S.**

ISDN is here today, but not available in most locations "because something better is coming along." At least that's the excuse Pacific Bell gave me, that the faddish ATM network won't be fully in place (if ever) until 2010. What kind of competitive advantage will we have as a nation if we have to wait 15 years to make the phone system digital?

Like never before, the requirements of a global economy—the need for increased telecommuting and the demand for interpersonal digital connectivity and other services—require universal ISDN service in the United States and Canada (oh, never mind Canada; ISDN is readily available there). We will never see this happen unless the U.S. government steps in. The deregulation experiments of the Reagan-Bush era are over. Why a Democratic Congress and a Democratic president cannot see that many of these experiments failed is beyond me.

If left unchecked, the Baby Bells may go off and make PC clones or start a franchise of computer stores. Already Pacific Bell has decided to retail LAN hardware—it has an entire retail operation in place. It's time to put a stop to this. The phone companies must be reincorporated into a regulated monopoly or be left with their new businesses and a new regulated monopoly be established. Since they still have all the expertise, the former solution is the only real solution. The government must look at the use of profits and the non-telecommunications–related spending of the phone companies.

I personally believe that this situation is a crisis. We all must complain to Congress loudly and for as long as it takes to get these guys back on track. I'm sick of hearing about an Information Superhighway when most of us are still senselessly stuck somewhere out on an information dirt road.

PHOTOGRAPH BY JAMES McGOON

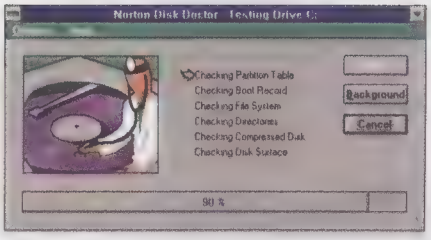
If you've ever owned a copy of Norton Utilities®, you know you don't need a super-hero's cape to have magic-like powers.

Famous for its daring rescues and recoveries, Norton Utilities is one of the most honored software programs in the history of personal computing. And now there's new Norton Utilities 8.0.

The first software package to combine true Windows recovery and configuration management with proven DOS protection and recovery tools.

Whether you or someone you know is having hardware problems, file system problems, DOS or Windows OS problems, Norton Utilities 8.0 gives you all the tools you need for diagnostics and repair in one great package.

Like Speed Disk, Norton Disk Doctor runs in the background.

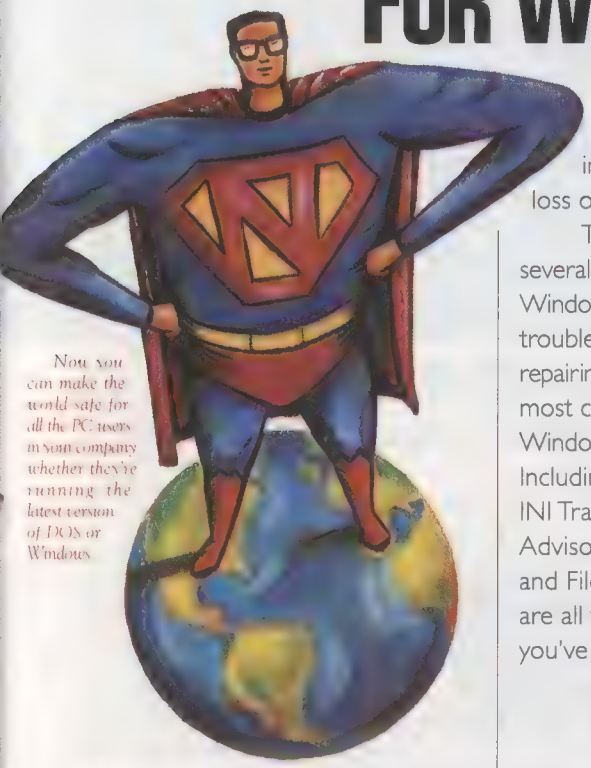


Our new System Watch monitors virtually everything going on within your Windows environment. What's more, it provides real-time crash protection by alerting you to any potentially dangerous situations that could result in system failure and the loss of your data.

There are still several other new Windows utilities for trouble-shooting and repairing even the most challenging of Windows problems. Including INI Tuner, INI Tracker, INI Advisor, INI Editor and File Compare. And there are all the classic DOS utilities you've come to rely upon.

The pioneer of data protection and recovery brings you the new improved Norton Utilities 8.0

After Years Of Saving DOS Users, Now You Can Make The World Safe For Windows, Too.



Now you can make the world safe for all the PC users in your company whether they're running the latest version of DOS or Windows.

A Monumental New Upgrade.

Both Speed Disk™ and Disk Doctor® now operate in the background. Providing continuous disk optimization and file system analysis and repair.

You'll find support for the widest range of compression formats under both DOS and Windows. In addition, there's a complete diagnostic tool set for analyzing all of your computer's hardware components from drives to video.

There's also our new Interrupt Conflict testing to help eliminate conflicts and their subsequent lock-ups and to make it easier for you to install new devices on your system.

It all adds up to a major upgrade.

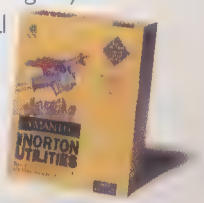
And if you are one of those MIS super-heroes, ask us about our new Norton Utilities Administrator.™

Both our new Norton Utilities Administrator and our Norton Utilities 8.0 come with a full 60-day, money-back guarantee.

For more purchasing information, call us at 1-800-628-4777, ext. 9317.*

Start Your Day With Norton Utilities 8.0.

For maximum protection, you should always boot your PC with Norton Utilities 8.0 at the very beginning of your working day. So zap over to your local computer retailer or software store now. And make the world a safer place for everyone.



SYMANTEC.®

*For more information in Canada, call 800-667-8661. Symantec, Norton Utilities and Norton Disk Doctor are registered trademarks of Symantec Corporation. Norton Utilities Administrator and Norton Speed Disk are trademarks of Symantec Corporation. All other brand names or trademarks are the property of their respective holders. ©1994 Symantec Corporation. All rights reserved.

Circle 122 on reader service card.

Gil Schwartz

Power Up—Not!

I'm writing as fast as I can because I'm working on my laptop and I don't want to run out of juice, the way I usually do just about the time when I'm honing in on an important idea and then here comes the message that I'm running on reserve power and that I'd better put myself to sleep, or plug myself in, or turn off my backlighting, or something else inconvenient, especially like now, while I'm on a plane.

That's the thing about batteries. They're like business friendships. They start off all bright and brisk and full of promise, but before you know it they drain off, no matter how carefully you try to make them last, and poof! When you need them most, you're high and dry without a paddle.

Wow. Down ten minutes from just two actual minutes of use. I'd better turn off my screen backlighting. That's better. Except . . . I can't really . . . see very well now. I have to kind of tilt the screen a little bit . . . this way . . . there! That's fine. I can almost see the blinking of the cursor now and imagine the words I've already written. Kind of like taking notes on a dream you had in the middle of the night, scratching out a message to yourself that will make no sense when the light of morning comes. But that's all right. If I have to choose between frizzing out in the middle of a job or stumbling around in the dark, it's a no-brainer.

I'm not saying things aren't better than they used to be. Yeah, I remember my first laptop, an old NEC that ran admirably on a clunky, enormous battery unit that coughed up sputum and gave out in just a little over an hour. Nowadays, the battery in my sturdy 6.8-pound Versa is thin, lean, and efficient, delivering about two full hours of power, unless, of course, I'm working in a graphics-intensive application . . . or unless it was overcharged in the first place, or undercharged, maybe, or the moon is in the seventh house and Jupiter is aligned with Mars, in which case I get a lot closer to . . . well, about an hour and 15 minutes. Maybe 16.

Oh no. Here I am with only 55 minutes of power left and I've just been sitting here looking out the window while my precious bodily essence is seeping, flowing, oozing away! It's a terrible feeling.

Like the time I was getting on a flight in Miami, where the security checks are particularly egregious, and I say to the guy who looks like a terrorist but is actually a guard, "This is a computer." And he says, "Turn it on." And I say, "Sure. No problem." Except there is a problem. My battery, like the aged family pet in a Disney film, has died in its sleep. It's no longer a computer at all, in any real sense. It's . . . a doorstop. I have to check it as luggage. Luggage! I'm still talking to my CPU about that horrendous indignity.

Or the time I was sitting on my couch, having finally pushed the rock of procrastination on the chairman's quarterly memo up the steep incline of my laziness and positioned myself to roll it down the other side. And I have produced not one, not two, but two and one-eighth pages of Total Quality. "Given the stiff requirements we have set for ourselves in this regard, it is virtually miraculous that we have exceeded them by producing the following numbers," I wrote. Inspired? Perhaps not. But present on the page? No question. Seized with ambition for excellence, I then laid in a very nice table incorporating all sales, margin, operating profits, and investment information. I was just selecting a 10 percent gray fill for highlighting the reduction–in–head-count line when *bzzt.* Darkness was on the face of the waters, and nearly two hours of musing, perusing, and, finally, raw labor was in vain.

One minute you're there and the next? . . . PFFT. You're gone . . . Seeping, flowing, OOZING away . . . Like the AGED PET in a Disney movie . . . COUGH cough. Oh no. Not now.

But what's the point of complaining? Those are the rules of the game as we play it now. Battery life is short, and then you die. That's all there is to it. Oh sure, we can live carefully, watching our power like busy little worker ants who waste not, neither do they want. Or we can go for the gusto, pedal to the metal, risking a premature cutoff when we still have so much to say and do and be. Either way, though, that moment of truth comes too soon to us all. And after that moment . . . nothingness. That's nature, I guess. You can't fight it.

But, my friends and neighbors, what of the digital, wireless, modular infotainment highway of the metafuture? Huh? Will it be dolloped out to us in two-hour doses? How can we get there from here with our pathetic power cords plugged into the nearest outlets? There are so many opportunities awaiting us as a civilization, and if we can uncouple ourselves from the mother baseboard and. . . .

Oh no. Not now. I'm too young to die.

Wait. Please. *Cough cough.* I'm growing dim. I'm losing altitude. I'm . . . gone. And with so much to tell you, too. Isn't there anything I can do about that?

I know!

Hi, guys! Have you met Mr. Pencil?

PHOTOGRAPH BY JAMES McGOON

Step Up To High-Resolution Scanning Without The High Cost.

Introducing the ScanMaker IIHR, a 24-bit, color flatbed scanner for heavenly images at a down-to-earth price.

Microtek, the world's largest desktop scanner manufacturer, with over a decade of scanning innovations, rises to the occasion. The new ScanMaker IIHR gives you smoother color gradations and increased detail in shadow and highlight areas for all the photos or illustrations you scan. Its optical resolution of 600 x 1200 dpi (2400 x 2400 dpi through software) is also great for capturing intricate line art and logos or enlarging small originals.

For image quality and dependability, the ScanMaker IIHR, at $1,499 retail, actually outperforms some of our competitors' models that come with sky high price tags.

Included with every ScanMaker IIHR is Microtek's award-winning color calibration/correction system — DCR™ (Dynamic Color Rendition). Calibrating the ScanMaker IIHR to a photographic industry-accepted calibration target, DCR creates a custom profile of your specific scanner and ensures the most accurate color possible as you scan.

Windows users also get Microtek's ScanWizard™, an easy-to-use drag and drop system for image management, faxing and printing. And every ScanMaker IIHR includes the full-version of Adobe Photoshop, for total image control and color separating scanned images.

For more about the ScanMaker IIHR, DCR, ScanWizard, or for the name of your nearest authorized Microtek reseller, call **1-800-654-4160**.

MICROTEK

Better Images Through Innovation.

Circle 185 on reader service card.

The following are trademarks or registered trademarks of their respective companies: Adobe Photoshop of Adobe Systems, Inc.; Windows of Microsoft Corporation; Microtek, ScanMaker, DCR, Dynamic Color Rendition, ScanWizard of Microtek International, Inc. All other trademarks or registered trademarks are the property of their respective holders. Specific software bundles are subject to change without notice. SMIIHREV41594

New! ■ CHICAGO PREVIEW: Windows for 1995

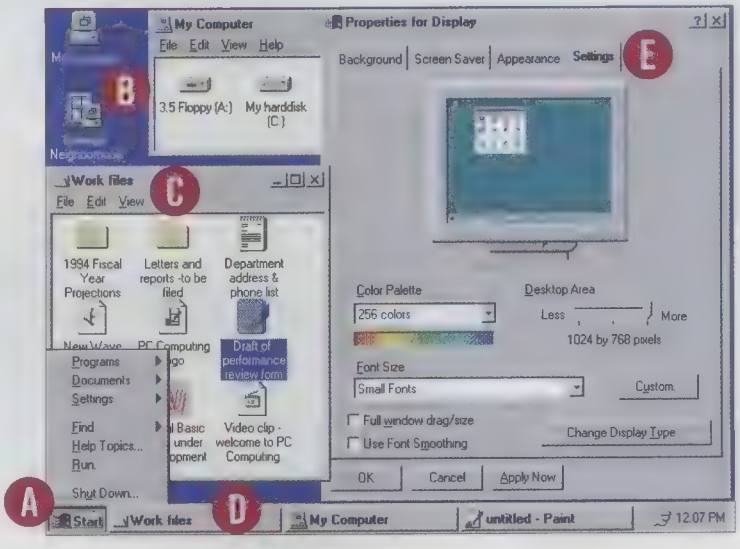
A Windows Worth Waiting For

Warning: If you're happy with Windows 3.1, stop reading right now. Because once you see what's inside the next version of Windows, all the design flaws and petty annoyances you've learned to work around will have all the charm of a leaky faucet. Out of system resources? *Drip.* SYSTEM.INI? WIN.INI? *Drip. Drip.* General Protection Faults? *Stop!*

Whatever it's finally called, whenever it finally arrives, the next version of Windows, code-named Chicago, will be a monumental upgrade. A team of *PC Computing* editors spent two days at Microsoft's Redmond campus in May, working with the first official beta release of Chicago and grilling the system's developers. Despite rough edges, the inevitable beta bugs, and the warning that the system isn't *completely* finished, we came away impressed.

The new Windows interface is sleek and elegant. Cynics will point out similarities between Chicago's new all-in-one desktop and the Macintosh's System 7, or OS/2's Workplace Shell. This is not a bad thing—both systems trounce Windows 3.1 in usability. Countless small improvements and several large ones make Chicago smooth and easy to operate—and much, much more powerful.

OVERVIEW There's Something for Everybody



Easy Windows: The new interface is both dummy-proof and expert-friendly. Program icons sit directly on the desktop. Files show up in nested folders that open in onscreen windows, just like the Macintosh system. Nearly every object on the desktop is customizable. You can even configure Chicago to look and work just like Windows 3.1. But why would you want to? Unlike the confusing Windows 3.1 interface, the new Windows is consistent down to the smallest details.

A. Most common tasks, from launching a program to finding a file, are accessible via the **Start** menu. You can't miss it—at start-up, the words "Click here to begin" bounce along the Task Bar.

B. Program, file, and folder **icons** can now sit directly on the desktop—no more Program Manager. The My Computer and Network Neighborhood icons give instant access to local and network files.

C. From **title bars to buttons**, Chicago's windows have an all-new and totally customizable look.

D. Open folders and programs sit on the **Task Bar**.

E. You configure Chicago from **tabbed dialog boxes**, like this visually intuitive one for monitor settings. (Bonus: You no longer have to restart Windows when you change display resolution.)

Windows for Dummies Turn on your computer, push the big Start button in the lower left corner, and you get instant access to common tasks. Look to the right of the Start button for Chicago's other big usability home run. The Task Bar, which runs along the bottom of the screen (or anywhere else you want it), lets you switch among running tasks with a single click. Also, Pop-up Tool Tips have migrated from Microsoft applications onto the Chicago desktop.

Fortunately, Chicago isn't just for dummies. Windows experts will find that right-click menus are everywhere. The hottest new power feature? Shortcuts, which let you create a pointer to a file without making a copy. You can even mail a shortcut to another Chicago user across a network without losing track of the original file.

New Territory Whole layers of Windows middle management—Program Manager, File Manager, and their peers—have gone into retirement. Instead, meet a much more powerful Windows application called the Explorer (profiled on page 59). Other programs get access to the Explorer's features, too—including the ability to view any of 30 popular file formats—through new File Open and File Save dialog boxes that are automatically grafted in to your existing applications.

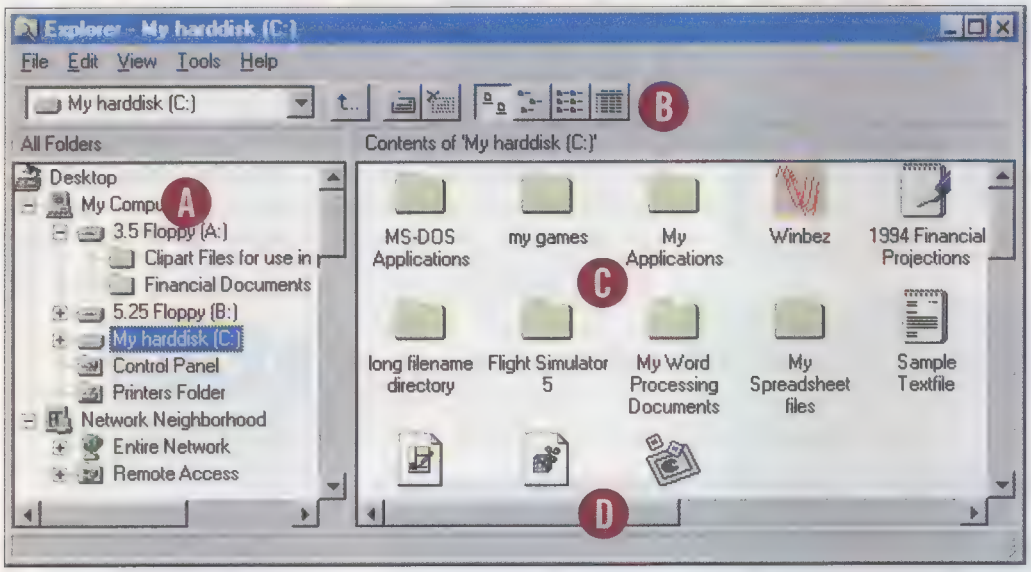
It's hard to imagine that anyone will dislike the clean, sophisticated, intensely visual look and feel of the new

USABILITY: *Microsoft's usability lab deserves credit for Windows' intuitive and simple new interface.*

PERFORMANCE: *New 32-bit file, font, and graphics systems should kick most Windows PCs into overdrive.*

TECHNOLOGY: *Something old, something new, something borrowed, like a lot from Apple and Big Blue.*

VERDICT: *An instant classic—and sure to unleash a tidal wave of powerful new 32-bit apps in 1995.*



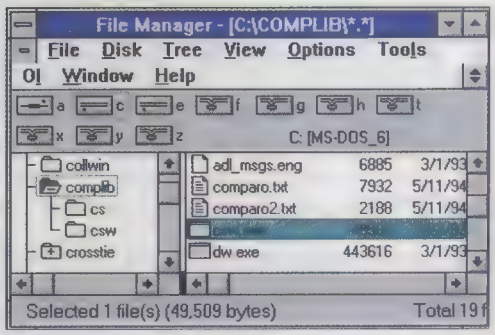
A. Unlike the Windows 3.1 File Manager, the **Explorer** handles all types of objects—files, Control Panel applets, even printers.

B. Icons on the **tool bar** change dynamically, depending on the type of objects you're viewing.

C. The default view displays large icons; you can choose small icons or a list format. In any view, you see **long filenames.** By default, Chicago hides file extensions, which are indicated by icon type.

D. Proportional thumbs, **sliding bars** change size to help you instantly judge the size of a scrolling list.

Bye-Bye File Manager, Hello Explorer: This outline-oriented universal browser (above) lets you look at any object anywhere on your PC, on CD-ROMs, even on the network. Confused by the colorful icons? Just switch to list view. The old File Manager (right) is a thing of the past. Even better, Chicago's new FAT-compatible file system stores a wealth of new information, including long filenames, and the dates that files were created and last accessed.



interface. But for those who do, there's a compatibility option that restores the Windows 3.1 interface, complete with the clunky old File Manager and Program Manager.

No Performance Anxiety

It's too early for Chicago time trials, but you don't need a stopwatch to see some differences. Current 16-bit Windows applications will run faster, thanks to the improved 32-bit Windows file access, graphics, and the TrueType engines. Real 32-bit Windows applications can use preemptive multitasking and multithreading. What's the payoff? Unlike Windows 3.1, Chicago can play a video clip, format a disk, and download a file simultaneously—provided that you give it a speedy PC to work on.

Among Windows propellerheads, there's a raging debate over Chicago's 32-bit-ness. Is it or isn't it? The short answer: A lot of Chicago is 32-bit, but some isn't. Microsoft claims that the remaining 16-bit portions of the code are necessary so that Chicago can run on 4MB systems.

Windows 3.1's worst design flaw—the puny 64K system resource heaps—is improved. While the heaps are still there, Chicago uses other memory pools for much of its internal processing. And Chicago cleans up abandoned resources even when applications don't.

In practical terms, look for Chicago to run acceptably on 386DXs with 4MB of memory. But given the sheer bulk of today's top applications, a 486 or Pentium with 8MB of memory is a better choice. Microsoft is still considering

offering a separate Pentium-optimized version of Chicago.

Old Friends, New Look

As soon as you install Chicago, all your current Windows applications get a new look, complete with chiseled borders, updated common dialog boxes, and new Minimize, Maximize, Close buttons. Inside, the 32-bit TrueType rasterizer makes fonts smoother with built-in antialiasing. The only older applications that won't run under Chicago will be real-mode disk utilities and shell programs that have specific hooks into Windows 3.1.

Chicago bypasses DOS and runs completely in protected mode, although on startup it can stop briefly in real mode to process the now-optional CONFIG.SYS and AUTOEXEC.BAT for loading TSRs and old device drivers. But you can demand a command performance anytime: There's a built-in DOS interpreter, and you can run DOS applications in individually tunable virtual machines. Since there are no more real-mode drivers, you get 600K of DOS memory—enough to run essential business applications like, *ahem*, Flight Simulator.

Making Connections

With the introduction of Chicago, Microsoft does away with the "For Workgroups" line of Windows, because every copy sold will come with built-in peer-to-peer networking. For millions of NetWare users, Microsoft is leaving nothing to chance. Chicago will include Microsoft's independently developed 32-bit protected-mode client software, which allows seamless access to NetWare servers; it even supports long filenames.

Look for massive Internet traffic tie-ups within days of Chicago's release, too. Net veterans will shudder at the prospect, but anyone who's struggled with protocol stacks will rejoice at the news that TCP/IP support is built into Chicago. The base system even includes bare-bones Telnet and FTP utilities.

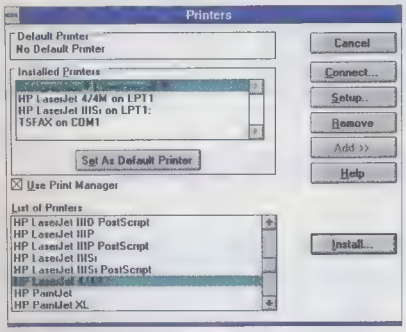
Notebook owners will find it easier to stay connected to the network from the road. Double-click on a setup wizard and Chicago turns any PC into a secure remote access server. Using a notebook or another desktop PC as a client, you can dial in and pull a file off the remote access server or browse the network. A clever utility called the Briefcase will automatically synchronize files between your notebook and your desktop PC, too.

The New Management

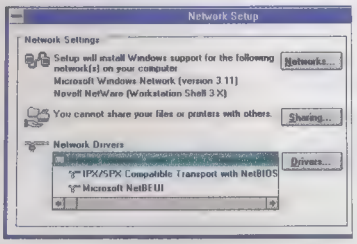
Installing the new operating system should be as easy as slipping a CD-ROM into a caddy (the system is available on

SIDE BY SIDE WINDOWS BEFORE AND AFTER

Windows 3.1

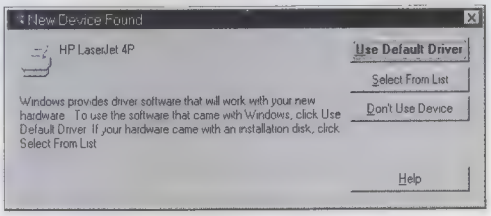


Maze of Printer Options: Windows 3.1 forces you through a labyrinth of buttons and secondary dialog boxes to set up a new printer. And the print spooler is somewhere else entirely.

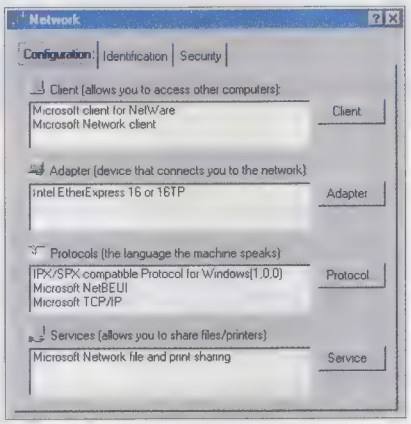


Network Nightmares: Windows for Workgroups 3.11 offers an easy LAN setup utility, but hooking a PC to a network is still a minefield. Adding TCP/IP support requires a pro—or Prozac.

Chicago



Plug and Print: Chicago's Plug-and-Play hardware detection and plain-English dialog boxes make setup a snap. And all printer controls—including the vastly improved print spooler—are in the same place.



Network Niceties: Support for NetWare? Built in. TCP/IP access? Instantaneous. This is how all networks should work.

FILEBOX

Windows "Chicago"

Minimum System Requirements: 386 or better, 4MB of RAM.

Recommended Configuration: 486 or Pentium, 8MB of RAM.

Hard Disk Space Required: 15 to 20MB.

The Competition: Apple's System 7 and IBM's OS/2 2.1 came first, but the new Windows will be a better choice for most desktops.

First Applications: Microsoft and Lotus will scramble to get Office and SmartSuite bundles onto shelves within 90 days of Chicago's release. Most top-selling Windows apps will get Chicago-inspired upgrades in 1995.

Retail price and packaging details not set at press time. Street price for upgrades from Windows 3.1 should be less than $100. Floppy-disk and CD versions will be available. Microsoft Corp. (800) 426-9400

The hit the road jack.

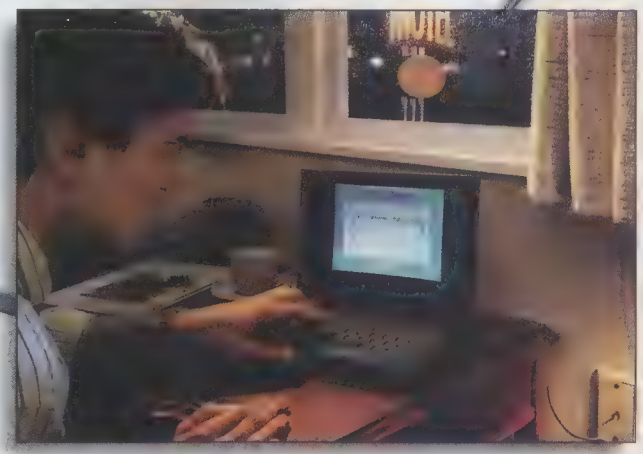
Now there's a great new way to live off the LAN. Whether you're heading out of town or just heading home, LAN Distance lets you easily connect to your office network from your Windows™ or OS/2® remote PC.

Use LAN Distance to dial into the LAN and do everything you could do if you were at the office. It's your network node on the road. An in-house network in *your* house.

With hostlike security features, the integrity of your LAN resources is rock solid. LAN Distance even filters and directs WAN traffic to minimize gridlock, so your road node can really move.

All you need is the modem—LAN Distance is a software-only solution. And since it's network operating system independent, it works with IBM LAN Server, Novell® NetWare®, Artisoft® LANtastic® and Banyan® VINES.

For more information, call **1 800 3-IBM-OS2.** In Canada, call **1 800 465-7999.**



Shorten the distance between you and your LAN—make the LAN Distance call.

How they compare:	IBM LAN Distance	DCA Remote LAN Node	Shiva LANRover	Novell NetWare Connect
Connectivity Options				
Remote to LAN	Yes	Yes	Yes	Yes
Remote to Remote	Yes	No	No	No
LAN to Remote	Yes	No	No	Yes
LAN to LAN	Yes	No	No	Yes
Remote Connectivity Sync, ISDN, X.25 (In addition to ASYNC)	Yes	No	No	Yes
LAN Application Interfaces NetBIOS, NetBEUI, 802.2 (In addition to IP and IPX)	Yes	Yes	Yes	No
Security WS Addr., Sec. Admin., Logon Policies, Logon Day/Time (In addition to User ID, Password and Callback)	Yes	No	No	No

And the next time you hit the road, it'll be like you never left.

We're in the business of connecting yours.

This ad was created by LINTAS and got to this publication on time using DOS, Windows and OS/2 programs running on OS/2. IBM and OS/2 are registered trademarks of International Business Machines Corporation. Windows is a trademark of Microsoft Corp. All other products are trademarks or registered trademarks of their respective companies. © 1994 IBM Corp.

IBM®

floppies, too). Better device drivers and hardware detection should also minimize compatibility hassles for most video adapters, printers, and modems.

INI files, thankfully, are history, except for skeletal versions required for compatibility with 16-bit Windows software. Instead, crucial configuration details like user preferences, hardware settings, and security are stored in the Registry, a database that you can distribute across a Chicago network. You can also wave good-bye to endless cache and swap-file tinkering—Chicago expands and contracts its buffer space to match available memory.

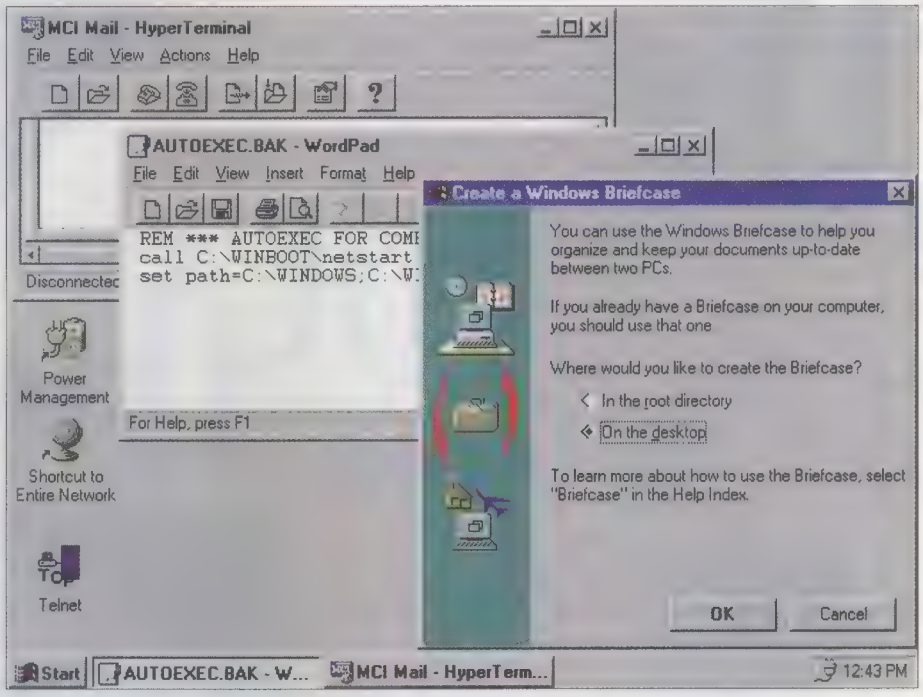
If you're responsible for keeping network users happy and productive, Chicago will help. It has management tools to let administrators create network-wide standard configurations, perform backups, and disable potentially dangerous features like file sharing and remote access.

And then there's Plug and Play, which will slowly turn hardware hassles into a distant memory (see "How It Works," page 222). Plug-and-Play PCs and peripherals have already begun to reach the market. By early next year, you won't be able to buy a system that doesn't support this revolutionary technology.

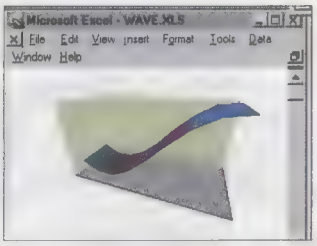
The Waiting Game In fact, the most frustrating feature in Chicago is its schedule. The exact date that shrink-wrapped packages will appear depends on how fast the Chicago team can swat the bugs turned up by tens of thousands of beta testers. Microsoft predicts that Chicago will hit the streets before the end of 1994. There's an outside chance they'll meet that goal. And there's no doubt that 1995 will be the year of Chicago.

If using Windows 3.1 while you wait seems a little like torture . . . well, don't say we didn't warn you. ED BOTT

NEW FEATURES OUR FAVORITE BRAND-NEW APPLETS



It's in the Details: Even the little stuff gets fixed up in Chicago. A very usable new HyperTerminal replaces the boring old Terminal program, WordPad steps in for both Notepad and Write, and synchronizing files between a desktop and portable is made easier with the Briefcase feature. Current Windows apps get the new Chicago look automatically (right).



D Decision Points: Here's What We're All Waiting For

1. At press time, the **first official Chicago beta** was nearly ready.
2. Plan to **upgrade** to the shipping version of Chicago in early 1995.
3. **Budget** for new 32-bit applications starting right after that.

A Sane Upgrade Neurotic IS Managers will want to roll out Chicago slowly—but what else is new? The rest of us will want to upgrade immediately. Nearly everything on our Windows gripe list has been fixed, and Chicago is full of productivity-boosting gems.

While we wait for Chicago, another army of developers is working on the next version of Windows NT. Code-named Cairo, it blends the Chicago shell with the NT kernel (see "The Power and the Glory" on page 64) and an object-oriented file system to create a powerful new operating system for workstations and servers. But Cairo won't arrive until at least ten months after Chicago. Cairo is not the successor to Chicago. Instead, the two operating systems are designed to work together.

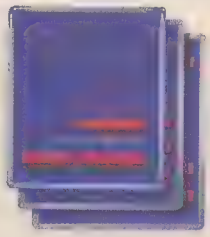
How compatible is Chicago? How fast is it? How will it fare in *PC Computing*'s Usability Labs? We'll have the answers, starting next month.

ONLY $179 U.S.

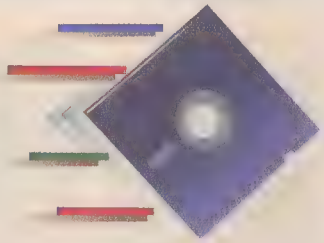
Smartcom For Windows.

We Worked Longer And Smarter To Make It Easier and Faster!

Connect to PCs, Macintoshes®, DEC Vax, Minitel, DataView, or almost anything else



The Editor creates documents with color, ANSI graphics and more



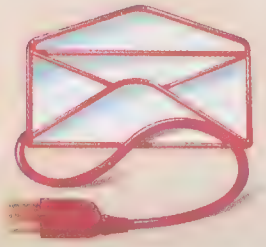
Send and receive files with speed and confidence

Assign edit and program actions, macros, scripts to keys for easy access

Connect to your favorite online service with a keystroke or a click

Available in five languages, Smartcom can be your international standard

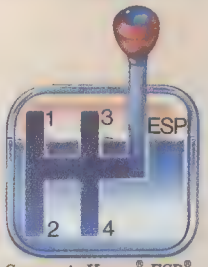
Easy enough for novices, sophisticated enough for experts



Accessing E-Mail and editing messages is easy

Automate communications and create custom programs with SCOPE scripting language

Download and view .GIF images, even create slide shows



Supports Hayes® ESP® Communications Accelerator for faster Windows communications

User-defined Smart Buttons do your work for you – just click!

Finally, communications software that lets you run Windows™ the way you had hoped - easily and quickly. Turn it on and this powerhouse automatically configures the modem, sets the speed, and gets you communicating right out of the box. With Smartcom™ for Windows, you're always getting constant, easy to understand visual feedback on call status and file transfers. *Computer User* says Smartcom ***"fills a gaping hole in the Windows world."***

Since Smartcom for Windows is easier to use, you'll be a speed demon on the job. Our powerful SCOPE scripting automates repetitive tasks to save you time and money with on-line services and mainframe connections. It even has a Learn option that records your keystrokes to automatically create button driven scripts for accessing E-mail, printing, customizing - just about anything. According to *Windows User*, ***"performance will never be a worry."***

With Smartcom for Windows 5 language options, you can finally set the standard for global communications too. It can be used with high-speed modems, ISDN, LANs, Hayes® ESP® Communications Accelerator, and NetBIOS or TCP/IP internetworking.

MICROSOFT® WINDOWS™ COMPATIBLE

Call for details on multi-user licensing. Corporate Evaluation Program available. Call 800-934-2937 or use our FAX back service *Hayes Fax Response* at **800-HAYES-FX** and select Document 946. In Canada, call **800-665-1259.**

Hayes®

Increasing the Speed of Business.™

Go *Online with Hayes* BBS; call 800-874-2937 or 404-446-6336.

© 1994 Hayes Microcomputer Products, Inc., P.O. Box 105203, Atlanta, GA 30348. Hayes, the Hayes logo and ESP are registered trademarks and Smartcom is a trademark of Hayes Microcomputer Products, Inc. Other trademarks mentioned are trademarks of their respective companies.

Circle 152 on reader service card.

The Power and the Glory

USABILITY: *Better crash protection, long filenames.*
PERFORMANCE: *Much, much faster than Windows NT 3.1.*
TECHNOLOGY: *Tighter code, new and better features.*
VERDICT: *With Version 3.5, NT becomes a real corporate operating system.*

Watch a Daytona 500 stock-car race and you remember two images: thunderous speed and 15 car crashes. While Microsoft may have wanted to suggest velocity when it chose the code name "Daytona" for the new 3.5 release of Windows NT, it's safe to assume the bit about crashes wasn't intended. Especially because the brave early adopters of the first release of Windows NT (Version 3.1) were plagued with too much of the latter and not nearly enough of the former.

Add to that the system's huge resource requirements and the involuntary waiting period for the introduction of NetWare client software, and you have one operating system desperately in need of an upgrade. Windows NT 3.5 addresses these complaints.

Well Tuned Windows NT 3.5 needs less RAM than does Version 3.1. In the earlier version, you couldn't get a speeding ticket in a school zone on a system with less than 16MB of RAM. But Version 3.5, even with just 8MB of RAM, looks and feels faster than the original (see Winbench performance chart, above right).

NT 3.1 did offer a great advantage over ordinary Windows 3.1: crash protection from the horror of one application bringing down the entire system. There was only one problem: It worked only with 32-bit applications, of which there are still, a year later, only a few. In NT 3.1, all of your 16-bit applications shared the same piece of track, and if one crashed, the others piled right into it.

In NT 3.5, each 16-bit Windows and DOS application gets its own virtual DOS machine (VDM). You can run your old applications right into the wall and the other applications will keep running. It's real multitasking of Windows applications, at last.

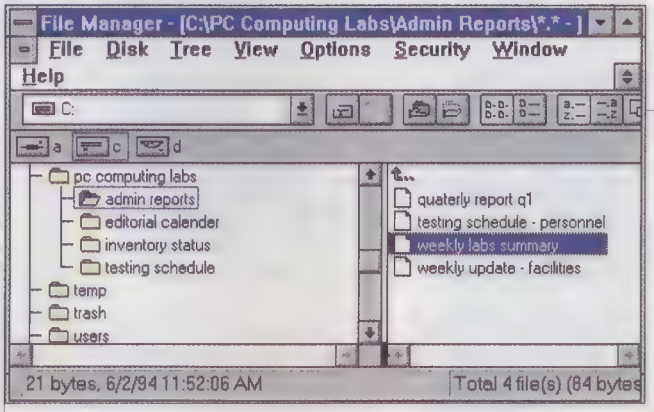
Share the Road Although applications can no longer smack into each other, they can share data, thanks to support for OLE 2.0. Although it was not available in the beta release we tested, full OLE 2.0 support is planned for Windows NT 3.5, and it should let you drag and drop data between all 16- and 32-bit applications.

NT's networking has really improved in two main areas. First, all the pieces you need to connect to a Novell server are included in the box. Second, TCP/IP performance in Version 3.5 is much faster, and Serial Line Internet Protocol and Point-to-Point Protocol (SLIP and PPP) are built right in.

The NT 3.5 file system fixes the 8-character limit of DOS, and allows filenames of up to 255 characters long, even on standard file systems. Long filename support works only with the applications that support it, however (Microsoft, not surprisingly, has versions of several apps in the works).

Also new in Daytona is OpenGL graphics, the 3-D graphics engine developed by Silicon Graphics. Applications supporting OpenGL can display workstation-class graphics at workstation speeds.

Windows NT 3.5 is a far better corporate operating system than the previous release. On the server, its multitasking and security features are as strong as ever. On the desktop? Obviously, NT isn't for everybody, but the system has muscle that regular Windows lacks. Version 3.5's networking and reliability features, coupled with its lower system requirements, mean more desktop users can take advantage of the power it offers. ADAM MEYERSON

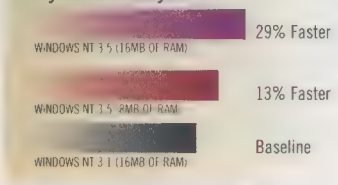


It's Fast: The Microsoft hot-rod team has finally devoted enough time under the hood of NT to turn Version 3.5 into a more efficient operating system. Even with less RAM, it runs rings around NT 3.1.

The Long and Short of It: Windows NT 3.5 supports long filenames even if your disk is formatted with a standard FAT (file allocation table). The previous version had long names too, but only if you used the NT-specific NTFS format. However, you can't take advantage of this feature unless your apps support it. Other ease-of-use bonuses: NetWare and TCP/IP client software in the box, superior crash protection, and 32-bit OLE support for all apps.

Windows Performance

Daytona Blasts By NT 3.1



NOTE: WINBENCH 4.0 MEASURES GRAPHICS AND DISK PERFORMANCE OF PCs RUNNING WINDOWS 3.1

FILEBOX

WINDOWS NT 3.5

Minimum System Requirements: 25MHz 386 or better, 12MB of RAM.

Recommended System: Runs great with 12MB of RAM on a 66MHz 486.

Hard Disk Footprint: 70MB of free disk space (20MB of which is used as virtual memory).

Graphics: The Silicon Graphics OpenGL interface for 3-D graphics is included, as is Video for Windows 1.1.

Price and ship date unavailable
Microsoft Corp.
(800) 426-9400

FIRST YOU GAVE US A DESK.

Now We Want To Run

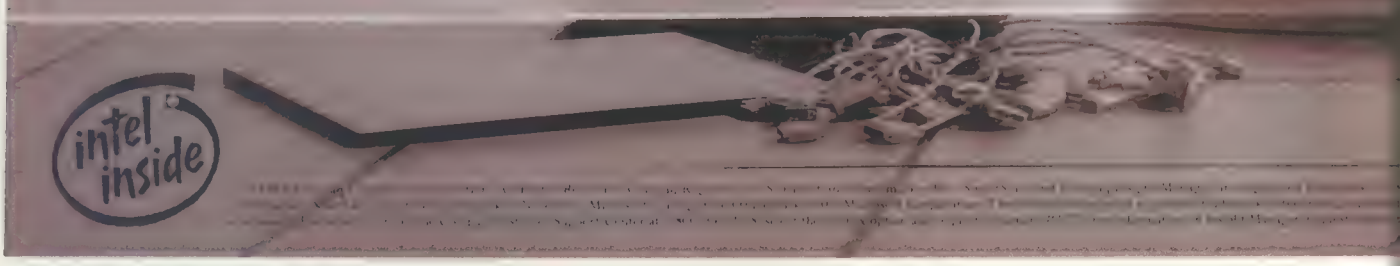
At Compaq, we know how much your people rely on information. After all, we've been working in your office for years. We also know that you're very serious about finding better and more efficient ways to handle information on a company-wide scale.

So, as your trusted PC company, we'd like to refer you to a solid, aggressive systems company: Compaq.

You may not be aware, but last year we provided over 63% of the world's superservers.[1] That's because our advanced systems can actually outperform mini-computers costing many times more, while delivering enterprise-class reliability. They can also radically cut per-transaction and maintenance costs.

Our experience, fueled by partnerships with such networking leaders as Novell, Microsoft and SCO, has helped us develop an integrated family of networking products – from the new ProSignia VS (which offers true server functionality at a desktop price) to the high-availability ProLiant line.

These systems can easily run today's emerging business-critical applications. They also reflect some refreshing common sense: Namely, there's no reason to downsize from big, complicated computers if you're



THE WHOLE COMPANY.

going to end up with small, complicated computers.

So Compaq's networking solutions bring you the same ease of use we've brought to the desktop. Our CD-based SmartStart technology vastly simplifies the most complicated part of the setup process — reliably configuring and fully optimizing your system.

Our servers are built to keep running, even when being serviced. The Compaq Insight Manager monitors 800 critical measurements of server health, and our Pre-Failure Warranty[2] ensures free replacement of key parts before potential problems turn into real ones.

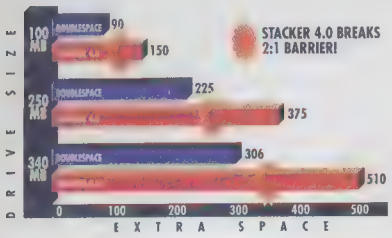
And since you'd rather not use your business as a test lab, we use our test lab as a test lab. Here, in real-life, high-volume networks, we work with our industry partners to ensure the highest compatibility and keep our commitment to open systems. So you'll never be boxed in, forced to deal with any one manufacturer.

If you're interested in receiving [illegible] Compaq systems immediately via fax, [illegible] do is call us at 1-800-[illegible] option and request [illegible] if you think we worked hard at the desk [illegible] you see what we do for you next. COMPAQ

Circle 164 on reader service card.

NEW STACKER 4.0 UNIVERSAL UPGRADE FOR DOS 6.0-6.2 USERS.

Announcing the Stacker® 4.0 Universal Upgrade. Here's the deal (compressed version): If you're a DOS 6.0-6.2 user, just walk into a reseller, and for a limited time, get Stacker 4.0 at a special upgrade price that—until now—was reserved solely for Stacker users. ■ Stacker 4.0 will instantly convert your DoubleSpace™ drives, and, we're convinced,



THE VERDICT IS IN.

DON'T SETTLE FOR DOUBLESPACE WHEN YOU CAN UPGRADE TO STACKER 4.0.

it'll convert you, too. ■ Only Stacker breaks the 2:1 compression barrier, giving you up to 375 extra megabytes on a 250MB drive. ■ And Novell's DOS Protected Mode Services (DPMS) reduces your memory requirement below 1MB to just 17KB when using DOS 6. ■ Get your Stacker 4.0 Universal Upgrade from your reseller, or call **1-800-522-STAC (7822)** ext. **6307** for more information. Compare new Stacker 4.0 with DoubleSpace today. Then you be the judge.

STAC®

Outside of the U.S., call 1-619-431-7474 or fax 1-619-431-9616 for more information.

© 1994, Stac Electronics. Stac and Stacker are registered trademarks of Stac Electronics. Microsoft, Windows, DOS 6 and DoubleSpace are trademarks of Microsoft Corporation. Novell Yes Developer tested only. Novell makes no warranties with respect to this product. Compression results may vary based on data stored on hard disk.

Circle 268 on reader service card.

64-Bit Video from ATI, Diamond, and Number Nine

The 64-Bit Graphical Question

Graphics accelerators are taking a tip from the Pentium: 64-bit is the way to go. We've already seen Matrox's pioneering efforts (see New! August 1993, page 68); we nominated its MGA Impression for an MVP Award last year. That was the trickle, and here's the flood—a flurry of new 64-bit boards including ATI Technologies' Graphics Pro Turbo, Diamond Computer Systems' Stealth 64, and Number Nine Computer's #9GXE64 Pro.

As with Pentiums, all 64-bit graphics cards blast bits like there's no tomorrow, though some are faster than others. All three boards we looked at this month support refresh rates of 72Hz or higher, even at 1,280 by 1024 pixels. They also all come in VL-Bus and PCI varieties, though the PCI boards have a slight usability edge: They configure themselves.

Mo' Better Color These next-generation boards bring more than performance gains to the graphics world—they also add color. Using speedy dual-ported VRAM instead of the slower dynamic RAM (DRAM) common on lower-cost boards, the 2MB versions of these three cards support accelerated 16-bit (near–photo-quality) color at 1,024 by 768; the 4MB configurations support rich 24-bit color for rendering true photo quality at 1,024 by 768.

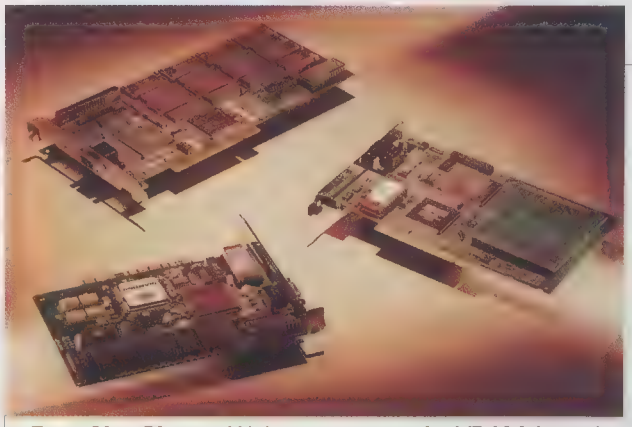
Anyone who struggled with last year's epidemic of buggy video drivers will be happy to know that board makers appear to have learned their lesson: All of the drivers we tested this year were stable and well-behaved. And Windows utilities for selecting the board's resolution, colors, power-management options, and other features are now (happily) standard equipment.

Our favorite utility comes with Number Nine's card. It can adjust a board's refresh rate under Windows—a DOS-based trial by fire with the boards from Diamond and ATI. But Diamond's utility also has a quirk: It hides itself in the Control Panel, where you're certain not to find it unless you read the manual.

Quick and Easy The clear performance champ was ATI's 4MB $699 Graphics Pro Turbo—the speediest graphics card ever to zoom across our test bench. Driven by ATI's mach64GX graphics chip, it even accelerated video playback.

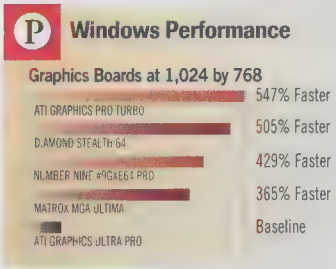
For those on a budget, there's Diamond's Stealth 64, which is the most affordable board of the three we looked at.

None of the boards that we tested will leave you drumming your fingers impatiently. If we were stranded on a desert island with only one video board, we'd take the #9GXE64 Pro for its emphasis on usability. But every now and then we'd probably wonder if we should have settled on the fastest board we've ever seen, ATI's Graphics Pro Turbo. WENDY TAYLOR



Fast, Not Cheap: With street prices for VRAM-based 64-bit cards hovering around $450, these cards stress performance and features over price. They have the processing muscle to take the wait out of Windows.

Pentium Envy: These new 64-bit boards flew past Matrox's first-generation 64-bit MGA Ultima—and ATI's older 32-bit Graphics Ultra Pro.



USABILITY: *The crown goes to Number Nine's #9GXE64 Pro.*
PERFORMANCE: *All three leave VGA in the dust. Graphics Pro is fastest.*
TECHNOLOGY: *These winners combine 64-bit processing and VRAM speed.*
VERDICT: *A must for high-level, high-res, high-color work.*

FILEBOX

ATI Graphics Pro Turbo

Resolutions: Up to 1,280 by 1,024 at 76Hz vertical refresh rate, 24-bit color at 1,280 by 1,024 (4MB model).

$449 (2MB)
$699 (4MB)
ATI Technologies
(905) 882-2600
Reader Service No. 601

Diamond Stealth 64

Resolutions: Up to 1,280 by 1,024 at 100Hz vertical refresh rate, 24-bit color at 1,152 by 882 (4MB model).

$399 (2MB)
$599 (4MB)
Diamond Computer Systems
(800) 380-0030, (408) 736-2000
Reader Service No. 602

Number Nine #9GXE64 Pro

Resolutions: Up to 1,280 by 1,024 at 76Hz vertical refresh rate, 1,600 by 1,200 at 60Hz, 24-bit color at 1,152 by 870 (4MB model).

$499 (2MB)
$749 (4MB)
Number Nine Computer Corp.
(800) 438-6463
(617) 674-0009
Reader Service No. 603

PHOTOGRAPH BY ARNOLD TIOSEJO

HP's Spectacular Spectrums

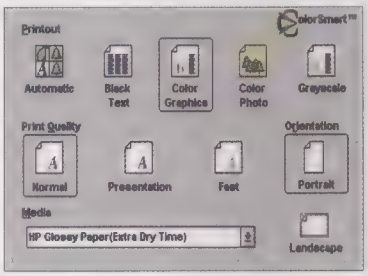
USABILITY: *ColorSmart turns you into a color genius.*
PERFORMANCE: *Looks great but prints slow.*
TECHNOLOGY: *The pinnacle of color ink jet printing for but a song.*
VERDICT: *You've waited entirely too long not to buy this color printer.*

Why don't you have a color printer? Too expensive, perhaps? You think color printers can't turn out high-quality text? Well, here's the truth: Your excuses for not buying a color printer aren't worth their weight in ink. You *can* get great-looking, inexpensive color and impressive text quality out of the same printer. Here's how: Get a Hewlett-Packard DeskJet 560C.

If you're intimidated by the world of full-spectrum printing—by concepts such as color accuracy, color matching, and dithering, for example—don't worry. HP's ColorSmart technology handles the gory details for you. The DeskJet 560C is the first HP product that supports ColorSmart, which analyzes your pages before they print to make sure you don't waste precious pennies and paper by printing your document over and over until it looks its best. You tell ColorSmart some of the specifics about your document, such as whether it's a scanned photographic image or a basic color graphic—and ColorSmart will optimize your output so that you get the best possible results.

Of course, if you like dealing with the complexities of color, you have the option of overriding ColorSmart and making your own noncolor-enhancing adjustments.

Penny-Pinching Palette: Hewlett Packard's DeskJet 560C printer, which replaces the company's DeskJet 550C, brings new meaning to the term *low-cost color.* How does the speed rate? We've seen better: The lower-end DeskJet 500C performed faster than the 560C in our tests, but the masterpieces that you can produce with this new printer make it well worth the wait.



Easy Excellence: HP's ColorSmart technology makes you a color pro in a flash. Just provide some document information and let HP do the rest.

Looks Matter The colors from the DeskJet 560C are brilliant and vibrant—very impressive, especially when compared to output from HP's lower-end sibling, the $485 DeskJet 500C. In our graphics presentation test (text and graphics), the colors in our bar charts were rich and smooth, though there was some bleeding between black outlines and colored bars. However, when we set the ColorSmart options to print graphics in presentation mode using high-quality glossy paper, we saw even better results and absolutely no bleeding between colors. Using all of the optimization options and glossy paper puts this printer into the major league alongside products costing two to three times as much. We did have some paper-handling problems with the glossy stock, however, which forced us to set the paper manually in the output bin before the document would continue printing.

There is one drawback to the ColorSmart technology: slow printing speeds. The DeskJet 560C took almost twice as long to print our presentation using ColorSmart as it did in the printer's default mode. And overall, the 560C's speed was less than stellar. But the output is so impressive you won't mind waiting.

Money Matters While your initial financial investment in a DeskJet 560C is relatively low, don't forget to consider the long-term costs. The 560C uses two ink cartridges—one black and one color (cyan, magenta, and yellow in one cartridge)—so you don't have to waste colored ink when printing straight black text. However, if your color printing includes heavy use of one color, say magenta, you'll need to replace your entire color cartridge when that single color runs out. Your cost per page will vary depending on what kinds of images you print and what type of paper you use. Expect to pony up at least 5 to 10 cents for each page of color (with typical 15 percent ink coverage).

The DeskJet 560C is an impressive machine. It packs a punch for a relatively low price. With its magnificent colors and impressive text quality, this is the printer that can finally push you over the color edge. KYLA K. CARLSON

FILEBOX

DeskJet 560C

Resolution: 600-by-300 dot-per-inch black and white; 300-dpi color.

Speed: 2 pages per minute (ppm) for black in normal mode; 4 minutes per page (mpp) in normal color mode; 7 mpp in presentation color mode.

Ink Cartridge Costs: $31.95 for black; $34.95 for color.

Ink Cartridge Life: 1,000 pages for black at 5 percent average coverage; 676 pages for color at 15 percent average coverage.

$719
Hewlett-Packard
(800) 752-0900
Reader Service No. 604

PHOTOGRAPH BY MARIO PARNELLI

COREL DRAW!™ 3

The Best in Graphics

Award-winning CorelDRAW 3 is the ultimate entry-level graphics package! This powerful, yet easy-to-use software includes illustration, charting, photo-editing and presentation capabilities. Its precision type control, incredible drawing power and stunning special effects allow users to create dynamic desktop publishing documents, detailed technical illustrations, eye-catching brochures and colorful presentations. With hundreds of fonts and thousands of clipart images CorelDRAW 3 is the best all-in-one value-packed graphics solution!

Here's what you can do with CorelDRAW!

Experiment with hundreds of different fills and special effects to create dynamic graphics.

With a library of thousands of clipart images and symbols, you don't need to be an artist to create eye-catching graphics.

CorelCHART is a fully featured, data-driven charting package that lets you create dynamic and informative charts. Choose from over 80 chart styles and input data directly or import data from a variety of popular spreadsheets.

Precision, power and flexibility make CorelDRAW the perfect all-purpose package for technical drawing.

With CorelSHOW, creating a slide show is easy. Choose one of the professionally-designed backgrounds included, assemble text and graphics and present.

Valuable libraries of over 250 fonts and special effects like text along a path, perspective, live blending and enveloping let you create headlines and mastheads.

Corel PHOTO-PAINT is the perfect program for creating bitmapped objects and editing photos. It's easy to enhance any scanned photo or bitmap with Corel PHOTO-PAINT.

Enter text directly on screen. Plus, there are "live links" to FrameMaker Document Publishing Software.

OVER 250 FONTS

OVER 14,000 CLIPART IMAGES & SYMBOLS

All company or product names mentioned are trademarks or registered trademarks of their respective owners.

* Plus shipping & handling

electronics boutique

Waldensoftware

1-800-800-5166

Call for the dealer nearest you!

$149.95

MICROSOFT for WINDOWS-COMPATIBLE

COREL®

1-613-728-3733 ext.24

KUR-0064

Circle 180 on reader service card.

Price or Pizzazz? You Can't Lose

"Sing to me, baby," you croon, grinning at your Texas Instruments' TravelMate 4000M, as passengers next to you gape in disbelief at the multimedia road show dancing on your tray table. The 4000M cuts no corners: It has a 25MHz 486SX CPU (or an optional 75MHz DX4), a 200MB hard drive, a built-in Media Vision sound chip, and a gorgeous 8.5-inch active-matrix display. Not bad for a machine with a traveling weight of 6.4 pounds on its own, 11 pounds with optional CD-ROM drive and speakers attached.

Maybe you're not the flashy type. Dell's Latitude 433C-170—which marks the company's reentry into the notebook market—is a sleek, demure, no-nonsense business machine that might be just what you're looking for. Powered by Intel's new 33MHz 486SX, it features a 9.5-inch dual-scan passive-matrix display, a 170MB hard drive, and costs $2,448.

Road Show Both machines prove that you don't need to be on a CEO's budget to afford a full-featured portable. The 4000M, in particular, features MIDI, microphone, and jacks for speaker jacks. Its optional $849 CD-ROM docking station attaches through a built-in SCSI port and adds stereo speakers, a CD-ROM drive, and an extra battery. It increases the notebook's footprint by barely a smidge (although it doubles its thickness). No need for CDs? Pack a couple of lightweight speakers, and let your presentations speak for themselves. Total traveling weight is still under seven pounds.

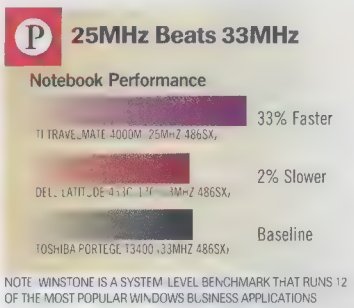
The 4000M has two side-mounted PCMCIA Type II slots that hide behind a door you can either flip open or remove entirely—an excellent design. An eraserhead pointing device sits below the space bar so that you can manipulate it easily with your thumbs or index fingers.

Key Features Despite a superb keyboard layout with dual Alt keys on either side of the space bar and independent document-control keys, the undersized cursor controls repeatedly tripped up our fingers. Otherwise, we found keyboard response excellent.

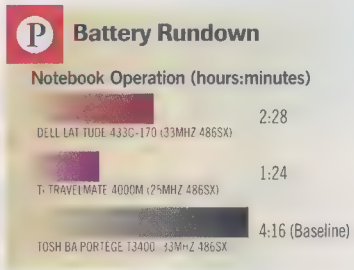
The Dell Latitude 433C-170 also wins high marks for usability, despite the marble-sized trackball oddly situated to the right of the space bar. Key layout is good: Cursor controls sit intuitively at the lower right of the board, but the full-sized Page Up and Page Down keys double as Home and End keys. You'll find distinctive spaces to the right of F4 and F8 for fingers that grope their way around function keys.

The Latitude display is big, sharp, and reasonably bright. There's only one PCMCIA Type II slot (and if anyone has a theory about how to remove a PC card once it's installed, we'd love to hear it). Despite these nits, the Latitude 433C-170 has a shrewd, plain-Jane feature set at an irresistible price. **MARTY JEROME**

Dell's Got a Good Latitude: The company's new notebook (above left) is well-priced, slim, and attractive. But if you have a multimedia show to take on the road, you should take TI's TravelMate 4000M (above right) and its optional CD-ROM add-on.



Not Too Slow: Despite its slower CPU, TI's TravelMate is faster than Dell's Latitude and has better video and hard disk design.



Running Time: The Latitude runs longer than the TravelMate—important if you do a lot of work far from an outlet.

USABILITY: *Dell's got a great keyboard, TI has a TrackPoint-like mouse.*
PERFORMANCE: *TI's TravelMate 4000M blasted past the Latitude notebook.*
TECHNOLOGY: *TI's battery-powered multimedia traveling package wins.*
VERDICT: *Take the TravelMate along for hot presentations on the road.*

FILEBOX

Latitude 433C-170

Configuration Tested: 33MHz 486, 8MB of RAM (expandable to 20MB), 170MB hard drive.

Weight: 6.4 pounds.

Support: One-year warranty, toll-free support.

$2,448
Dell Computer Corp.
(800) 613-3355
(512) 338-4400
Reader Service No. 605

TravelMate 4000M

Configuration Tested: 25MHz 486, 4MB of RAM (expandable to 20MB), 200MB hard drive.

Weight: 6.4 pounds, 11 pounds with hardware options.

Support: One-year warranty, toll-free support.

$3,399
Texas Instruments
(800) 848-3927
(817) 771-5856
Reader Service No. 606

PHOTOGRAPH BY MARIO PARNELL

When trouble is mounting

...solve Mac to PC file exchange problems with Conversions Plus.

Gone are the days when your work came to a grinding halt because you were working in a PC environment and someone passed you vital information on a Macintosh disk. Conversions Plus allows you to put a Mac in your PC, open it, convert documents between PC and Macintosh software automatically, and save Mac files to the disk – all while retaining the original formatting, **including** embedded graphics. You can even format Mac disks on your PC! External cables and cards are unnecessary. Just load the Conversions Plus software and stop your Mac to PC troubles from mounting, instantly. To learn more about Conversions Plus, and its more than 1000 file translation paths, **call us at 800-240-0030.**

Ask about our multi-packs, site licenses, and Macintosh products.

DATAVIZ™

55 Corporate Drive • Trumbull, CT 06611 • 203-268-0030

Circle 124 on reader service card.

COMPUSA THE COMPUTER SUPERSTORE · COMPUTER City SUPERCENTER · MicroWAREHOUSE · EGGHEAD SOFTWARE North America's Software Eggsperts

THERE'S A CONCEPT!

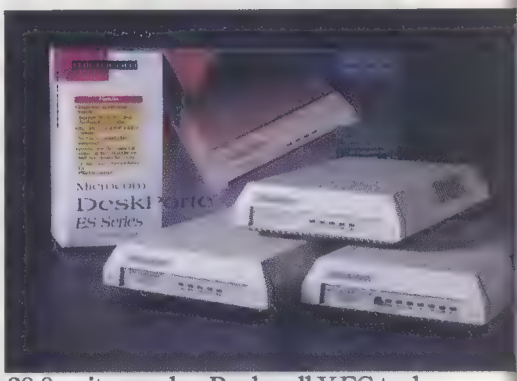
WHY BUY A 14,400 bps MODEM WHEN YOU CAN GET A MICROCOM 28,800 FOR $299.

Microcom modems already give you the fastest speeds and highest reliability in the industry. Now we've added another powerful advantage: unbeatably low prices.

Take our DeskPorte *FAST* ES 28.8. For only $299, it delivers twice the speed of 14,400 bps modems, with throughput rates of 115,200 bps. A great all-purpose modem for DOS, Windows and Unix.

For Windows users, our DeskPorte *FAST* EP 28.8 is a terrific deal at just $399. Using Microcom's innovative parallel port technology, it achieves sizzling speeds: up to 300,000 bps throughput without loss of data.

And if you want outstanding value in a full-featured V.32*bis* modem, put our $239 DeskPorte ES 14.4 at the top of your list. It delivers throughput rates of 57,600 bps. And connects with a wide variety of modems now in use.



Each model features full MNP® 10 (Microcom Networking Protocol™ Class 10) support.* That's the standard we developed for sure-fire connectivity under all line conditions. The 28.8 units employ Rockwell V.FC technology. And all three come with 14,400 bps fax software plus a free 5-year warranty.

So if you thought price might keep you from moving up to a Microcom modem — think again.

For more information, see your Microcom dealer; for a free modem info kit, call Microcom at

1-800-822-8224

COMPUTER City® SOFTWARE

MicroWAREHOUSE®
1-800-367-7080

PC Connection®
1-800-800-4396

EGGHEAD SOFTWARE
North America's Software Eggsperts.

microcom®

The brightest ideas in remote access.

Microcom, Inc. 500 River Ridge Drive, Norwood, MA 02062-5028
Phone 617-551-1000 • Fax 617-551-1021

*DeskPorte *FAST* ES 28 8 implements MNP 10 through 14,400 bps

Microcom and MNP are registered trademarks and DeskPorte is a trademark of Microcom Systems, Inc All other trademarks are the property of their respective trademark holders

Circle 136 on reader service card.

Approach 3.0

A Fresh Approach to Databases

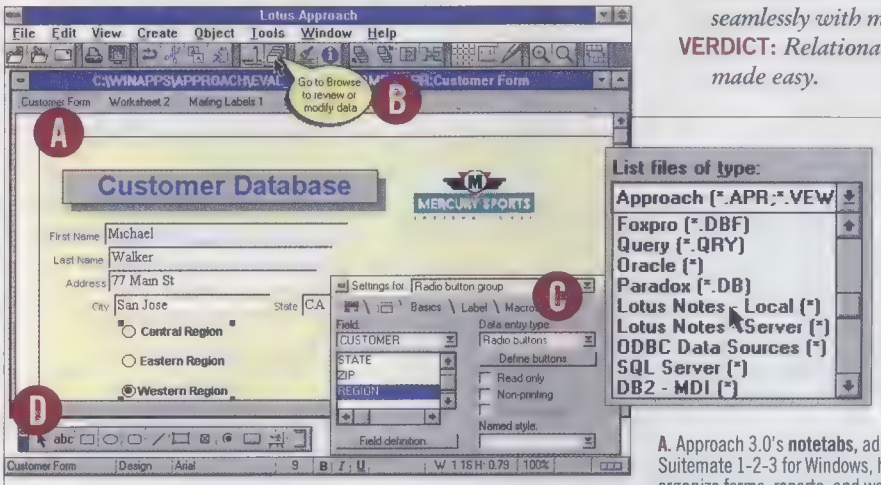
USABILITY: *Powerful tools and intuitive interface.*
PERFORMANCE: *Supposedly a screamer; beta code's slow.*
TECHNOLOGY: *Works seamlessly with most data.*
VERDICT: *Relational power made easy.*

Someone forgot to tell the developers of Lotus's Approach 3.0 that relational databases are supposed to be confusing.

Delightfully missing from this powerful program is the arcane terminology, cryptic code, and complicated report generators that database developers have struggled with for years. Instead, Approach 3.0 offers a superbly crafted point-and-click interface that feels as cozy as bunny slippers to anyone who's mastered a spreadsheet or word processor.

Approach 3.0 is a full-strength relational database with all the tools you need to build useful, usable applications in record time. It's not for professional developers—there's not enough control over the fine details of applications—but it's ideal for small businesses and departments that need to capture data and quickly turn it into great-looking reports.

Note that this review is based on a beta version of the software. Not fully sorted out or optimized for speed, it gives us a clear picture of what the program can do, although the version we examined was not quite ready for shrink-wrap.



Smart, Real Smart: With this release, a from-the-roots rewrite, Approach takes the spotlight in Lotus's SmartSuite package. The graceful new interface, which owes a huge debt to usability testing, offers a detailed look at what to expect from the next versions of every Lotus application, including OLE 2.0 support. It's also e-mail-enabled: One click sends your report over cc:Mail or Notes. Thanks to its exclusive PowerKey technology, Approach provides blazing access to external data files of many different formats—including, for the first time, Lotus Notes (above, right).

A. Approach 3.0's **notetabs**, adapted from Suitemate 1-2-3 for Windows, help organize forms, reports, and worksheets.

B. Usability enhancements include **balloon help** (accessible with a single right-mouse click) and a collection of intelligent Wizard-like Lotus Assistants.

C. InfoBoxes—compact control centers that provide instant access to styles, settings, and formats—are Approach 3.0's usability home run. The superbly organized dialog boxes are a vast improvement over the text-heavy property boxes found in Microsoft Access 2.0.

D. Common tasks are one-click easy, thanks to a **floating tool palette** that appears when you design a form or report.

Lotus-ized Interface

Earlier versions of Approach featured an idiosyncratic interface that didn't always adhere to Windows conventions. Approach 3.0, however, could serve as a model for how to build an innovative and intuitive interface. It doesn't just borrow the best ideas from other applications, it improves on them. And all the standard Lotus interface elements—SmartIcons and an active status bar at the bottom of the screen, for example—are fully integrated into the program.

Unlike earlier releases, which forced you to define forms and reports for each database, Approach 3.0 offers an optional spreadsheet-style view of data in rows and columns. You can accept the defaults or define multiple worksheet views using only the fields you need, taken from related tables.

Creating a relational join is a simple visual process, as it is in Approach's main competitor, Microsoft's Access 2.0. You open the files you want joined, drag a field name from one list to another, and you're done.

With this release, Lotus unveils Lotus Assistants, step-by-step guides for building forms, reports, crosstabs, worksheets, mailing labels, and charts. Assistants are dynamic, unlike Microsoft's Wizards, which force you to follow a narrowly defined path to accomplish a task.

The online documentation, a sore spot for anyone who worked with Approach 2.1, is comprehensive and useful. Stay-on-top help offers detailed instructions for those who prefer to work on their own.

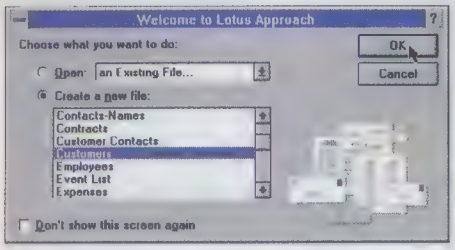
Pretty and Productive

Approach 3.0's interface for designing forms and reports is intensely visual—a marked contrast to the text-heavy property boxes found in Access.

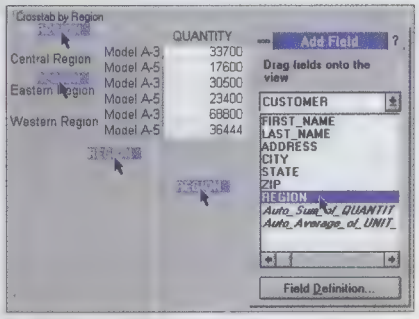
Building a worksheet, for example, is as simple as dragging field names onto a blank screen. Want to turn the worksheet into a crosstab? No problem. Just drag a field from the top of the screen to the left-hand edge, and Approach builds an Improv-style view of your data.

With most database managers, creating radio buttons, check boxes, and drop-down lists are the tasks that dump you into code-slinging territory. Approach, on the other hand, turns them into fill-in-the-blank exercises. Setting field validation properties and defining a data input mask are equally straightforward. And for a guaranteed crowd pleaser, you should check out

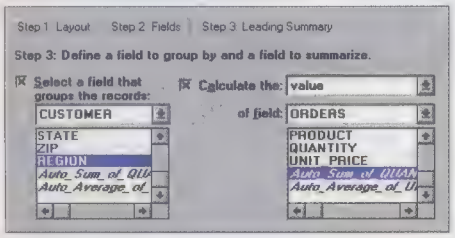
GUIDED TOUR THE AMAZING CODE-FREE DATABASE



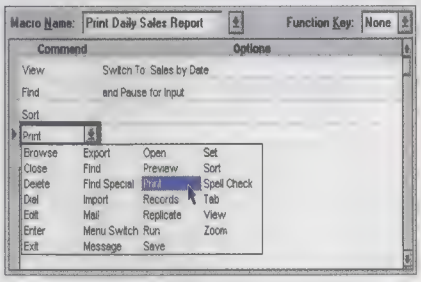
Start Here: Ready-made database templates make an easy-to-use application downright telepathic. If you want to set up a fairly typical database, just fire up one of the 51 templates.



Row, Row, Row: Worksheet views give you a snapshot of data in an easy-to-read grid format. Turning a worksheet into a crosstab is simple.



Beyond Wizards: Lotus's Assistants are more flexible than Microsoft's Wizards. You can run through the steps in your own order. This Report Assistant, for example, lets you skip the first two steps when editing a report.



No Code Required: You can attach point-and-click macros to objects and events, creating shortcuts to application development without writing code. You can also attach macros to buttons, fields, or events.

FILEBOX

Approach 3.0

Minimum System Requirements: 4MB of RAM and 386 or higher.

Hard Disk Footprint: About 5MB for a full installation.

The Competition: Access 2.0 in power, Claris's FileMaker Pro in ease of use.

Network Features: SQL access via PowerKey, a Lotus-developed driver for accessing dBASE, FoxPro, Paradox, SQL back ends, and Access files. PowerKey can also use ODBC-compatible back ends.

Security: You can set both table-level and field-level security (depending on the database format you've chosen).

$495 (upgrade and introductory prices not set at press time)
Lotus Development Corp.
Approach Database Division
(800) 343-5414, (415) 306-7890
Reader Service No. 620

the brilliantly simple report writer, which can create a data summary in a single click.

Making Connections Approach has no native data format (although its default data type is dBASE IV). Instead, it's a master of mixed environments. And this version expands its scope considerably. Approach 3.0 lets you work in dBASE, FoxPro, or Paradox format, and for the first time, it directly reads Paradox 4.5 files—no import required.

Straight out of the box, Approach 3.0 works across multiple networks with Novell's NetWare and NetWare Lite, Microsoft's Windows for Workgroups and LAN Manager, and Artisoft's LANtastic. Also included: built-in links to Oracle, Microsoft, and Sybase SQL back ends. You'll need a MicroDecisionware gateway to get to DB2 data.

Offices that have standardized on Lotus applications, such as 1-2-3 and Notes, will find the integration nearly irresistible. You can use 1-2-3 as a front end for Approach (or vice versa), eliminating the pain of transition for spreadsheet users. And because Approach can directly manipulate Notes databases, it can put a friendlier face on Notes without sacrificing the latter's security and robust replication.

In previous incarnations, Approach saddled would-be developers with a clunky macro builder that was limited in power and hard to use. This version has an elegant macro designer that resembles the one in Access 2.0. Each macro can consist of an unlimited number of steps. You add steps by choosing one of 38 verbs and selecting options from an onscreen display.

Macros can trigger other macros based on programmed conditions. For example, you can define a macro that checks the system clock and prints a sales report every Monday. Macros can be attached to buttons, fields, or events such as entering or exiting a field—you can have a warning message pop up whenever the amount in a currency field is unusually high.

A clever designer can use forms and macros to build a robust and easy-to-navigate Approach application, all without writing a line of code.

Bottom Line Ultimately, Approach 3.0 is a liberating product: It frees the knowledge worker from the shackles of IS. It's both powerful and friendly, productivity-enhancing without being cutesy. It's the database we've all been waiting for. **ED BOTT**

HOP ON!

IF YOU'RE NOT USING CANVAS™... YOU'RE MISSING OUT.

When the rubber hits the road, you can't afford to spin your wheels using yesterday's under-powered graphics software. You need drawing tools designed for today's high-tech tasks. Tools that deliver unrivaled speed and accuracy without inhibitions. That's Canvas for Windows.

Canvas fuses precision drawing, page layout, text handling, boardroom presentations and painting features in one easy-to-master application. Enjoy your work and become more productive with just the right combination of tools to break away from the pack. Without sacrificing quality or compromising your creativity.

Canvas for Windows has taken the graphics industry by storm. If you haven't heard the thunder, it's time you did.

DON'T LISTEN TO US.

Listen to the 400,000† high-tech professionals worldwide who power up Canvas every day in seven languages to produce today's top technical illustrations. Listen to the thousands of expert analysts from leading multinational corporations, government agencies and top educational institutions who have chosen Canvas as their graphics standard. Listen to computer experts at leading industry publications. They'll tell you that Canvas is the most advanced, cost-effective graphics solution. Period.

WE WON'T BORE YOU WITH THE DETAILS.

Needless to say, Canvas for Windows has all the drawing tools and features you'll probably ever need. From freehand Bézier curves to 1/65,000th-inch precision. From 15 flavors of auto-dimensioning tools to built-in color separations. From 24-bit color painting to 20 industry-standard import/export tools, including CDR, DRW and DXF. And thanks to our unique Open Architecture Technology (OAT™*), there's plenty of raw power available and even more when you need it. As proof, let us point out that every detail of this ad was created and color separated within Canvas for Windows.

DON'T MISS OUT ANY LONGER.

Stop grinding your gears with old technology. Quit wasting valuable time and energy with outdated graphics tools. Dust off your leather jacket, put on your baddest shades, then visit your favorite Canvas reseller today. Or call 1-800-733-6322 to order, and hop on for the ride of your life. Helmet not included.

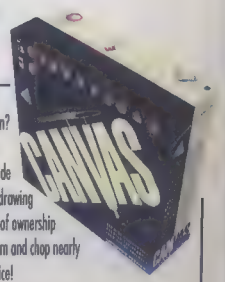
CANVAS

THE HIGH PERFORMANCE DRAWING ENVIRONMENT

WINDOWS | Macintosh

MONEY BACK GUARANTEE 30 DAY

$99.95 COMPETITIVE UPGRADE



Still using some other graphics program? Now we've made switching to Canvas even easier! Keep their clip art, but trade in that scooter for some real precision drawing power. Simply show your dealer proof of ownership of any Windows-based graphics program and chop nearly $300 off Canvas' already low $399 price!

DENEBA SOFTWARE 7400 S.W. 87th Avenue, Miami, Florida 33173 • Tel (305) 596-5644 • Fax (305) 273-9069
†Even more by the time you read this! Major credit cards accepted. Add $10 shipping in the US and $15 in Canada. Call for shipping costs elsewhere.
©1994 Deneba Systems, Inc. Canvas is a trademark of Deneba Software. Windows is a trademark of Microsoft Corporation. Macintosh is a registered trademark of Apple Computer, Inc. *OATs are good for you. Offer valid in the United States and Canada and is subject to termination or change without notice. This offer is not valid with any other promotion or offer.

Circle 175 on reader service card.

Finally, a PC that keeps up

IBM PC Direct

IBM

with you. Now and later.

Introducing the new IBM ValuePoint™ Performance Series: the performance-minded PC that gets even better as your needs change.

They say the one constant in life is change. And no PC helps you deal with change better than the new ValuePoint Performance Series.

The perfect PC starts with CustomerFit. The perfect computer isn't just a collection of technologies. It's a reflection of the way you work and the work you do. And it's always at a price you can afford. That's why we begin every phone call by listening to you. With CustomerFit, we'll create a complete IBM ValuePoint solution that fits the way you work, and the life you live.

ValuePoint 433DX/Sp	ValuePoint 100DX4/Dp
$2109	**$3349**
IBM Credit Lease $78/month[1]	IBM Credit Lease $123/month[1]
• 486DX/33MHz[1]	• i486™DX4/100MHz
• Pentium chip upgradable	• Pentium chip upgradable
• 270MB[2] HD, 4MB RAM	• 728MB[2] HD, 8MB RAM
• SpaceSaver with 3 slots, 3 bays	• Desktop with 5 slots, 5 bays
• VESA local bus	• VESA local bus
	• 256K L2 cache

The ValuePoint configurations listed above include an IBM Enhanced 101-Key Keyboard and Mouse, 1MB Video Memory (upgradable to 2MB), DOS/Windows™ and a 14V monitor with an actual viewable screen size of 13 inches when measured diagonally.

As your work changes, your new ValuePoint changes with it. You can upgrade processors all the way to the blazing new Intel® DX4™/100MHz processor, or to Pentium™ technology. You can expand RAM to a power-satisfying 128MB, install up to 4 hard drives, or choose the SpaceSaver, Desktop or Mini-Tower® configuration that suits you best.

You can even change your mind. And keep your computer. Let's say you have us build a Desktop or Mini-Tower ValuePoint with VESA local bus. And 6 months from now, you decide that PCI local bus is better for what you do. No problem. You can simply and economically switch to PCI local bus. It's that easy.

New 3-year warranty. Our superior service includes 1 year of onsite support anywhere in the U.S.[3] When you need to talk to us, we're always there, 24 hours a day, 7 days a week.

Call us today. With Soft Select™, our preloaded software service, your new ValuePoint can be up and running right out of the box.

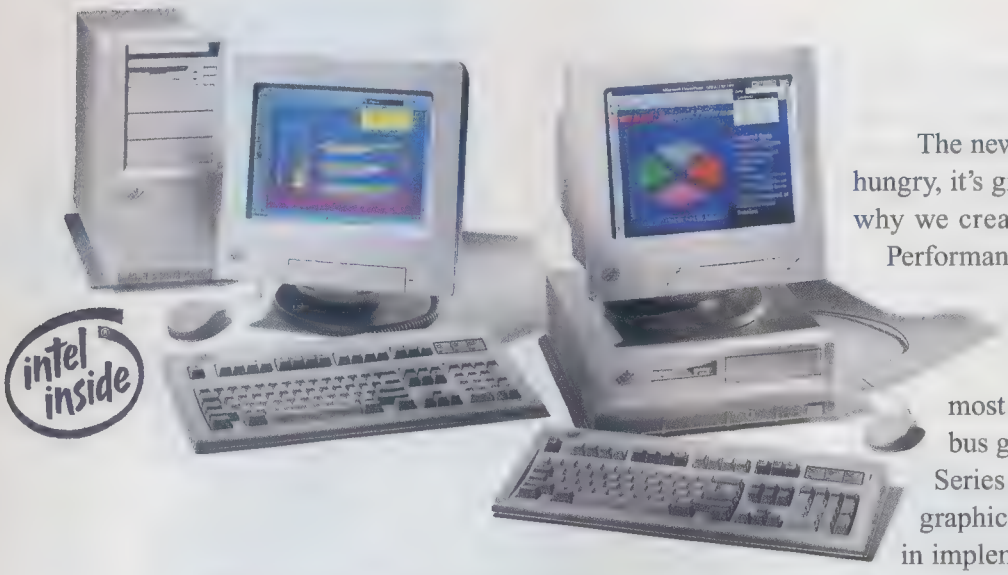
Call us, we're open 8am-10pm Monday-Friday and 9am-5pm Saturday (Eastern Daylight Time). In Canada call 1 800 465-7999.

IBM PC Direct

To order call today!

1 800 426·7695

Created for a higher standard



The newest software is more than power hungry, it's graphics crazy. Which is exactly why we created the new ValuePoint Performance Series. We've done a bunch of big (and little) things to speed up every aspect of your graphics performance. The most dramatic change is in our local bus graphics. Every new Performance Series system delivers superfast 64-bit graphics performance. (IBM is a leader in implementing this new technology.)

The new ValuePoint Performance Series delivers cutting-edge 64-bit local bus graphics performance.

Save time and money. Adding peripherals is a snap when your system is Plug and Play enabled. Your ValuePoint will easily "read" the instructions from other Plug and Play devices and automatically configure itself to use them. Plus every ValuePoint Performance Series PC is EPA Energy Star* compliant. You'll save money. We'll all save energy.

ValuePoint 433SX/Sp	ValuePoint 466DX2/Tp
$1989	**$2985**
IBM Credit Lease $73/month[1]	IBM Credit Lease $110/month[1]
• i486SX/33MHz	• i486DX2/66MHz
• 270MB[2] HD 4MB RAM	• Pentium chip upgradable
• SpaceSaver with 3 slots, 3 bays	• 340MB[2] HD, 8MB RAM
• VESA local bus	• Mini-Tower with 8 slots, 6 bays
	• VESA local bus
	• 128K L2 cache

The ValuePoint configurations listed above include an IBM 101-Key Keyboard & Mouse, 1MB Video Memory (upgradable to 2MB), DOS & Windows preloaded and a 14V monitor with an actual viewable screen size of 13 inches when measured diagonally.

IBM PC Direct

IBM

Call us, we're open 8am-10pm Monday-Friday and 9am-5pm Saturday (Eastern Daylight Time). In Canada call 1 800 465-7999.

# of performance. Yours.

With CustomerFit, you get precisely what you need. Whether you need a home office PC, workhorses for the whole department, a powerful standalone workstation, or even a complete LAN, start by calling us. No matter what, we'll create the system that fits your job. And your budget.

ValuePoint 433SX/Dp	ValuePoint 466DX2/Dp
$2049	**$2629**
IBM Credit Lease $76/month[1]	IBM Credit Lease $97/month[1]
• i486SX/33MHz	• i486DX2/66MHz
• Pentium chip upgradable	• Pentium chip upgradable
• 270MB[2] HD, 4MB RAM	• 270MB[2] HD, 4MB RAM
• Desktop with 5 slots, 5 bays	• Desktop with 5 slots, 5 bays
• VESA local bus	• VESA local bus
	• 128K L2 cache

The ValuePoint configurations listed above include an IBM Enhanced 101-Key Keyboard & Mouse, 1MB Video Memory (upgradable to 2MB), DOS & Windows preloaded and a 14V monitor.

CustomerFit goes beyond hardware. Soft Select preloaded software makes it easy to get up and running. We'll install, test and optimize as many popular applications as you want – for just $10. So your new ValuePoint arrives ready to run. Just hook it up and you're in business.

HelpWare® service and support makes it easy to live with, too. There's a 30-day moneyback guarantee on everything we sell.[4] And when you need to reach us, you have your choice of three around-the-clock Personal Systems HelpCenter® services: our phone center, an automated fax-back service, and an on-line bulletin board.

Call us today. Even if you aren't sure which ValuePoint is right for you. We're ready to listen to your questions, to help make the maze of clockspeeds, refresh rates and RAM a lot less intimidating. And when you're ready, we'll create a PC system that is CustomerFit for the way you work, and the way you live.

To order call today!

IBM PC Direct 1 800 426·7695

Look at your world

IBM PC Direct

IBM®

in a whole new way.

Our latest ThinkPads will give you a fresh perspective on personal computing.

Imagine giving persuasive stereo multimedia presentations that you can customize right up until the last minute. Swapping your diskette drive for a TV tuner to catch the latest news updates onscreen. Or sending faxes and transferring files from almost anywhere with cellular digital communications. Our latest ThinkPads can make that kind of freedom a reality.

The new ThinkPad® 755Cs. It may very well be the most powerful sales tool ever created. With one of the fastest notebook processors around. Spacious, removable hard drives available up to 540MB. Local bus video, a built-in microphone and CD-quality audio chip. Plus an arsenal of cutting-edge options.

ThinkPad 360Cs	ThinkPad 755Cs
$2599	**$3599**
IBM Credit Lease $96/month[1]	IBM Credit Lease $133/month[1]
• 486SX/33MHz	• 486DX2/50MHz
• 170MB[2] HD, 4MB RAM	• 170MB[2] HD, 4MB RAM
• One Type III or two Type II PCMCIA slots	• One Type III or two Type II PCMCIA slots
• Over $800 worth of preloaded business software	• Over $800 worth of preloaded business software
• 1-year International Traveler's Warranty	• 3-year International Traveler's Warranty

The ThinkPad configurations listed above include a 3.5" 1.44MB diskette drive, 85-Key Keyboard with integrated TrackPoint II™, NiMH battery and AC adapter, and a 9.5" VGA color display monitor.

The new ThinkPad 360Cs. Never before could you get so much ThinkPad for so little. Who says you (or your sales force) can't afford a color ThinkPad? The 360Cs gives you more than enough power for most businesses, at a price any business can afford. And it can perform double duty as a desktop PC with our optional docking station and color monitor (in ThinkPad-coordinated black).

HelpWare service and support covers you as you roam. Including a new 3-year International Traveler's Warranty[5] (1 year for 360Cs) and ThinkPad EasyServ™ courier repair service within the U.S. Of course, you also get our Personal Systems HelpCenter assistance 24 hours a day, 7 days a week.

Call us today, and we'll create your very own CustomerFit ThinkPad to give you an entirely new perspective on your work.

Call us, we're open 8am-10pm Monday-Friday and 9am-5pm Saturday (Eastern Daylight Time). In Canada call 1 800 465-7999.

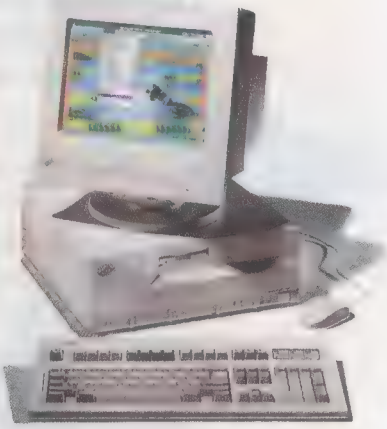
To order call today!

IBM PC Direct 1 800 426·7695

Great technology has its price. And it's less than you think.

ValuePoint 425SX/Si	ValuePoint Pentium
$1379	**$3289**
IBM Lease Price $51/month[1]	IBM Lease Price $121/month[1]
• i486SX/25MHz	• P/60MHz Pentium
• 212MB[2] HD	• 527MB[2] HD, 8MB RAM
• 4MB RAM	• PCI local bus video and slots
• VESA local bus video	• 4 slots, 5 bays
• 3 ISA slots, 3 bays	• 3.5" 1.44MB disk drive
• 3.5" 1.44MB disk drive	• DOS and Windows
• DOS and Windows	• IBM Enhanced 101-Key Keyboard and Mouse
• IBM Basic 101-Key Keyboard and Mouse	

Both systems include a 14V color monitor which has an actual viewable screen size of 13 inches when measured diagonally.



IBM PC Direct

Isn't it refreshing to talk to someone who actually listens? And who'll help you put together the system that's exactly right for you? Not more than you want. Or less than you'll need. The fact is, no one has a better selection of hardware, software, peripherals, and accessories than IBM PC Direct™. We make it easier to get what you want. And you can pay the way you prefer. You can choose from credit cards, 36-month business leasing plans, or purchase orders for qualified customers. If you're a student or educator, ask about our special prices just for you. One more thing: if you don't feel you've gotten the perfect fit, there's a 30-day moneyback guarantee on everything we sell.

ThinkPad 500	ThinkPad 350C
$1399	**$2199**
IBM Lease Price $52/month[1]	IBM Lease Price $81/month[1]
• 486SLC2 50/25MHz	• i486SL 25MHz
• 85MB[2] HD, 4MB RAM	• 250MB[2] HD, 4MB RAM
• Type I or Type II PCMCIA slots	• Type I or Type II PCMCIA slots
• 3.5" 1.44MB external disk drive	• 3.5" 1.44MB disk drive
• 7.4" VGA mono display (actual viewable screen size is 7.24" when measured diagonally)	• 9.2" VGA color display (actual viewable screen size is 8.97" when measured diagonally)
• 81-Key Keyboard	• 85-Key Keyboard

The ThinkPad configurations listed above include integrated TrackPoint II, NiMH battery and AC adapter, DOS™ and a trial subscription to PRODIGY.®[6]

Call us, we're open 8am-10pm Monday-Friday and 9am-5pm Saturday (Eastern Daylight Time). In Canada call 1 800 465-7999.

To order call today!

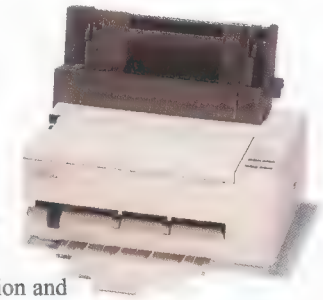
IBM PC Direct 1 800 426·7695

CustomerFit also covers what you see. And what you get.

Wall-to-wall beautiful. Our advanced, high-resolution "V" series monitors deliver a brighter, bolder, crisper, flicker-free image. But best of all, they're borderless – your image extends all the way out to the very edge of the screen. So there's no wasted space. And when you're not using them, they'll automatically power down to miserly energy consumption levels.[4] When you resume work, just touch a key or the mouse and they'll power up instantly, right where you left off. Cross-platform compatibility is built in, so you can plug it right into almost any IBM-compatible system and run most popular software.

17V $999
15V $579
14V $429

The 17V, 15V, and 14V monitors have an actual viewable screen size of 15.8, 13.7, and 13 inches, respectively, when measured diagonally.



Professional output, without the outlay. The value-priced IBM ExecJet® II 4076 has 600x300 dpi resolution and 12 scalable resident fonts, for professional-quality documents. And it's easy to live with, thanks to its quiet operation and a single-element replaceable print cartridge that snaps right in.

ExecJet II 4076 **$335**

The look and speed of a laser. For under $800. The IBM 4037 5E Page Printer raises the standard for small printers. Its 1500x300 dpi resolution (with our exclusive Print Quality Enhancement Technology) gives you the high-quality output you need for both text and business graphics. And you get 5 pages per minute speed, 16 scalable resident fonts, plus Lexmark™ reliability.

4037 5E Page Printer **$759**

There's a whole lot more in the IBM PC Direct Source Book. *You'll find our award-winning ValuePoints and ThinkPads, plus printers, monitors, hard drives, memory upgrades, multimedia, networking and software — 64 pages in all. And there's no charge. So order yours today.*

IBM®

Want even more choices? Just ask.

Just fill out and return this postage-paid card, and we'll send you the latest IBM PC Direct Source Book. FREE.

NAME

TITLE

COMPANY NAME

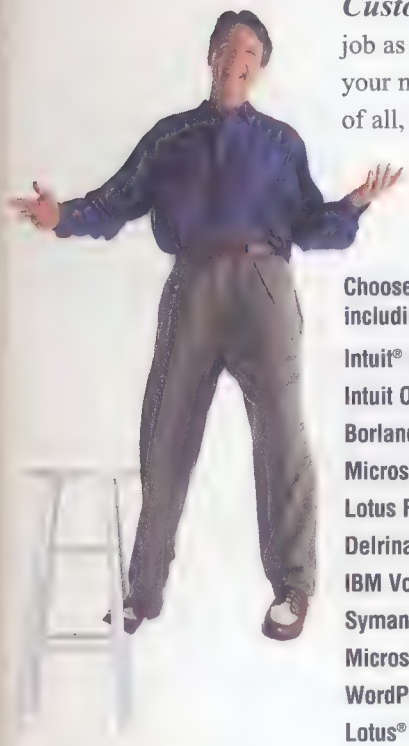
ADDRESS

CITY STATE ZIP

( ) DAYTIME PHONE ( ) EVENING PHONE

7695

With Soft Select preloaded software, you'll be up and running quick.



CustomerFit doesn't stop with hardware. You'll need the right software for the job as well. With Soft Select,[8] we'll load, test and optimize popular software to run on your machine, so your new PC is ready to hit the ground running when it arrives. Best of all, software installation is only $10 — for as many applications as you want.

Choose from over 60 of the most popular programs, including these best-sellers:

Intuit® Quicken® for Windows	$39
Intuit QuickBooks™ for Windows	$95
Borland® dBASE® IV for DOS	$499
Microsoft Office for Windows	$479
Lotus Freelance Graphics™ for Windows	$339
Delrina® WinFax™ Pro for Windows	$79
IBM VoiceType™ Control for Windows	$99
Symantec pcANYWHERE™ for Windows	$119
Microsoft® Word for Windows	$299
WordPerfect® for Windows	$289
Lotus® 1-2-3® for Windows	$309

IBM PC Direct

Call us, we're open 8am-10pm Monday-Friday and 9am-5pm Saturday (Eastern Time).
In Canada, call 1 800 465-7999

To order call today!

1 800 426·7695

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NUMBER 1541 DURHAM, NC

POSTAGE WILL BE PAID BY ADDRESSEE

IBM PC Direct
P.O. Box 12195
Bldg. 203/Dept. WN4
Research Triangle Park, NC 27709-9767

IBM PC Direct prices and offerings are subject to change or withdrawal. Prices/offerings in Canada may vary. Remarketer prices vary. Shipping and handling charges are extra. [1]IBM Credit Lease prices are quoted for 36 month terms. Lease rates quoted are good through 9.30.94, after which time rates are subject to change without notice. Lease available to qualified commercial customers only. [2]When referring to hard drive capacity, MB stands for 1,000,000 bytes; total user accessible capacity may vary slightly, based on operating system environment. [3]At no additional charge during warranty period. Onsite service available Monday-Friday, 8am-5pm in your time zone. Second and third year is customer carry-in service. Please ask your Sales Representative for details. [4]Please call 1 800 426-7695 for details on IBM's money-back guarantee and limited warranties. Copies available upon request. [5]International Traveler's Warranty service is available to those customers traveling to countries where this product is sold by IBM Business Partners. Other restrictions apply. Please ask your Sales Representative for details. [6]One month trial subscription to The PRODIGY Service at no additional charge. Telephone charges may apply in some locations. The energy saving circuitry is activated by the signals sent from the system units that support the VESA DPMS proposal. [8]Software programs listed are licensed to customers under non-IBM software vendor's terms and conditions provided with the package. IBM makes no representations or warranties regarding non-IBM software. *EPA as a matter of policy, does not endorse any particular company or its products. †Some 486 DX33MHz processors may be manufactured by IBM. IBM, Mini Tower, ThinkPad, HelpCenter, HelpWare, and Executive are registered trademarks and ValuePoint, TrackPoint II, Soft Select and ThinkPad EasyServ are trademarks of International Business Machines Corporation. Windows is a trademark of Microsoft Corporation. All other brands and product names are registered trademarks, trademarks or service marks of their respective holders. 36 USC 380. PC Direct is a trademark of Zift Communications Company and is used by IBM under license. ©1994 International Business Machines Corporation.

Printed on recycled paper

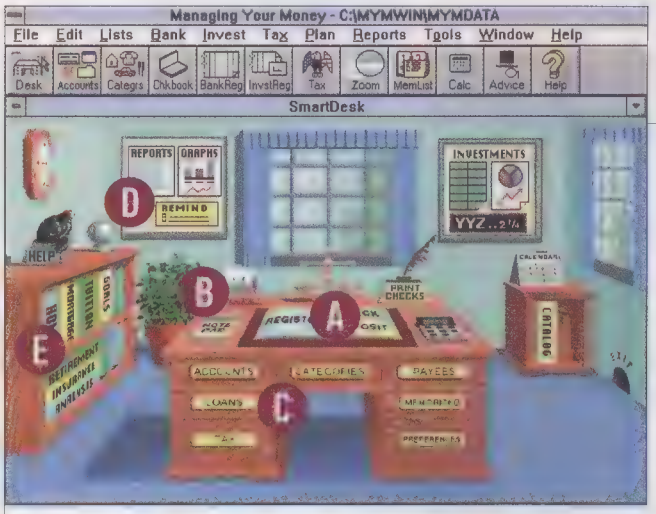
Worldwide Olympic Sponsor

Has Quicken Finally Met Its Match?

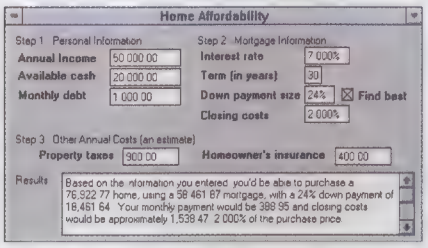
USABILITY: *Not just a pretty face, SmartDesk is fast and functional.*
PERFORMANCE: *Quicker than Quicken.*
TECHNOLOGY: *Everything an individual or small business needs to manage finances.*
VERDICT: *Looks good, works better.*

"Easy to use" is the most overworked cliché in computing, but the interface in the first-ever Windows version of MECA Software's Managing Your Money is more than easy to use—it's a breakthrough for the personal finance category. More than just a work-alike of Intuit's market-leading Quicken, Managing Your Money provides you with an object-oriented simulation of your home office called SmartDesk.

SmartDesk isn't just cute; it truly adds functionality. Each object on the screen is the functional equivalent of a pull-down menu, but far more intuitive. Of course, Managing Your Money for Windows has the usual menu and quick-action buttons for those who prefer them, but new users and even experienced veterans can save mouse clicks and mind time by using the checkbook, calculator, and other objects in and around SmartDesk.



Buy a House! Take a minute to enter financial information, and Managing Your Money will find the kind of home you can afford.



A. No more searching menus for the right entry point to your finances. Your **checkbook, check register, and deposit slips** are conveniently laid out right on your desktop.

B. SmartDesk also serves as a **launch pad** for many common Windows utilities, like the calculator, notepad, and card file, but you can substitute your own favorite applets.

C. Your account, memorized transactions, and categories lists are represented as your desk's **file drawers.** You can also organize tax features and file management there.

D. Stored around the room are **billboards** for reports, graphs, reminders, and investments.

E. Bookcases house mortgage, tuition, and other financial calculators, as well as ways to analyze your retirement and insurance needs.

Financial Food Groups Managing Your Money for Windows focuses on the four areas that define most people's finances—banking, investments, taxes, and planning.

The banking section is similar to Quicken's except that it lacks support for the online services IntelliCharge and CheckFree. On the other hand, Managing Your Money combines a scrollable check register and a blank check on a single screen—or on separate screens, if you wish.

Managing Your Money's tax planner is superior to Quicken's. You don't have to design a report or buy a separate add-on to get this functionality. Right out of the box, Managing Your Money gives you an up-to-date readout of your tax liability at the push of a button. The tax calculator dialog box instantly pops up with subtotals from the most commonly used tax forms so that you can perform what-if calculations and find out the tax consequences of any given financial move. At the year's end, you can easily export your data to MECA's TaxCut, ChipSoft's TurboTax, or any tax program that supports the TXF format.

Similarly, the investment analysis window gives you a quick look at the status of all your investments sliced in a variety of ways. Like Quicken, Managing Your Money lets you track the cost, price changes, annual and simple appreciation, and dividends on stocks, bonds, and mutual funds—even collectibles. But with Managing Your Money, you also can track puts and calls, strike prices, and expiration dates, as well as esoterica like beta coefficient and industry performance.

True to its name, Managing Your Money has a strong planning module. You can create budgets for up to three years at a time and compare those to actual budgets in ready-made and customizable reports and graphs. More important, the expert advice of Andrew Tobias is always just a right-mouse click away.

Should You Switch? If you're a longtime Quicken user, you probably won't want to convert your data and work style to Managing Your Money. MECA made the import easy, but remember that the easiest interface is the one you already know. For new users, however, Managing Your Money for Windows is the first real competitor we've seen for Quicken. It's truly unique and definitely worth a try for the low $35-to-$40 street price. MIKE HOGAN

FILEBOX

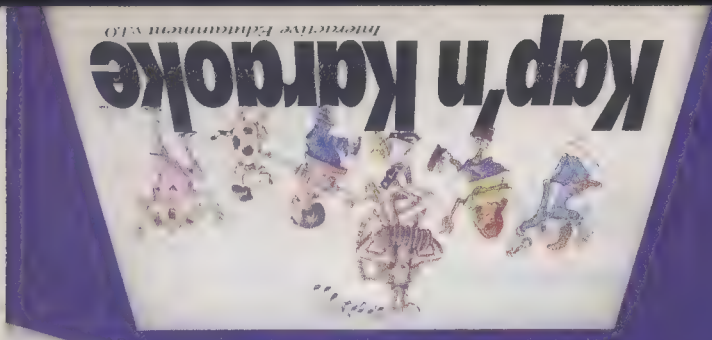
Managing Your Money

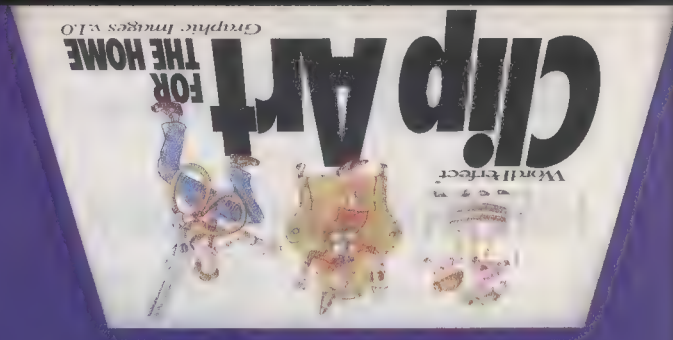
System Requirements: 4MB of RAM; hard disk space.

Competitors: Quicken.

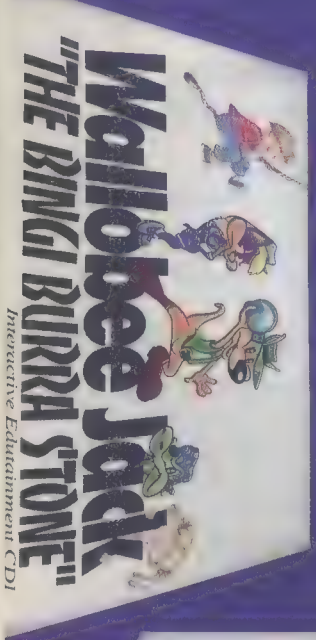
File Formats Supported: Imports files from Quicken DOS or Windows, Managing Your Money DOS Versions 9 and 10, Microsoft Money, CA-Simply Money, and others. Be warned, you'll still have to ease your data into the new program—not all information is imported.

$79.95; $29.95 for upgrades
MECA Software
(800) 820-7458
Reader Service No. 624





Take a q
around M



Announcing some very exciting news from WordPerfect Corporation.

It's a remarkable new line of easy-to-use software programs.

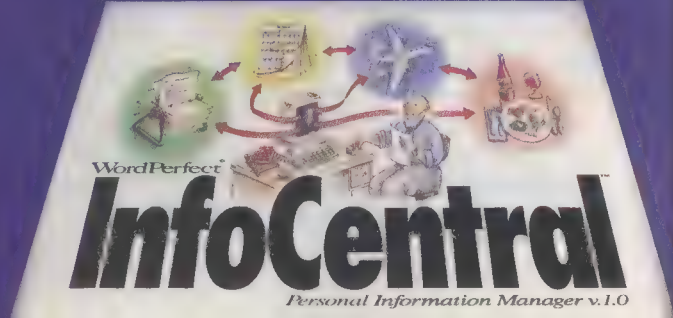
We call it WordPerfect Main Street.

And if you're looking for the perfect software for your home or office, Main Street is right up your alley.

You just can't find a better or more convenient place to shop for software. Whether its useful tools for your business, easy-to-use applications for your home, or fun entertainment for your kids, just look on Main Street.

Want to organize and easily find all your personal business information in one place? Look for *WordPerfect InfoCentral*. Looking for the best way to keep on top of all your home and small office projects? Pick up *WordPerfect Works*.

Looking for something for the kids? Try one of the Wallobee



Random House Webster's
School & Office Dictionary
Electronic Edition v.1.5
Gram·mat·ik
Grammar and Style Checker v.5.1
ick look
ain Street.
ack adventures. You'll find all
hese programs – and over two
lozen more – on Main Street.
Even the prices on Main
Street are friendly. Because
very product is in the neighbor-
ood of $29 to $149.
And every Main Street pro-
duct is backed by WordPerfect
Corporation's unbeatable money-
back guarantee.
If you're not completely satis-
ied after 90 days, you can return
our program for a full refund.
So head for your favorite
software dealer, and take a stroll
down WordPerfect Main Street.
There's no better place to
bring the best software home.
Call 1-800-526-5208 or see
your local retailer for more
information.
WordPerfect®
Main Street.™
Bringing the best home.
WordPerfect
Clip Art PREMIUM COLLECTION
Professional Graphic Images v.1.0
Wallace Jack
"THE THAI SUN ADVENTURE"
Interactive Edutainment CD2
WordPerfect
Works
Integrated Software
WordPerfect
ExpressFax+
Integrated Communications Software v.3.0

Erector Set for Multimedia Apps

USABILITY: *Hard to learn, but easy to use.*
PERFORMANCE: *Improvements are in usability, not speed.*
TECHNOLOGY: *Handles OLE, text retrieval, and color palettes like a pro.*
VERDICT: *A boon for application developers.*

Need to create industrial-strength multimedia applications, courseware, or front ends? Conventional wisdom says go with AimTech's industrial-strength (and expensive) IconAuthor or Macromedia's Authorware—or suffer through Asymetrix's tougher-to-use Multimedia ToolBook. The new choice: ToolBook 3.0, the product's first revision in two years and now a better choice for multimedia developers.

Multimedia ToolBook has always been flexible. But its interface and ease-of-access features have trailed the competition. Version 3.0 delivers the needed face-lift plus a bunch of ambitious new features that leapfrog those of competitive products. Priced at $895, it will undoubtedly change the balance of power in the authoring market.

Like a Book ToolBook is based on a book metaphor rather than IconAuthor's and Authorware's flowcharts. This metaphor divides the control structure into book and page backgrounds and foregrounds, augmented by canned objects from libraries and sample books. You can even call outside dynamic link libraries (DLLs) for the few functions unavailable in ToolBook's language, OpenScript. (But this level of functionality comes at an obvious price: Nonprogrammers need not apply.)

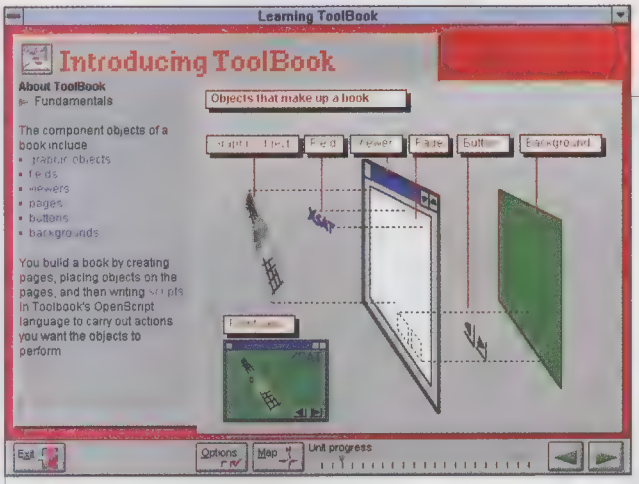
With comprehensive toolbars, new objects, and other enhancements, Version 3.0 enables you to build a book with almost zero scripting. Scriptless, path-based, or cell-based animation, drag-and-drop support, cute video transitions, and OLE support also pump up its usability. Unlike our experience with the previous release, incorporating video is as simple as drawing one box and selecting a file.

Similar new features dramatically reduce programming time and many of the frustrations associated with older ToolBook versions. In the past, it was easy to forget where you were supposed to edit a particular control (book, page background, or foreground). Now you simply click on the object and the script, and its association appears. Although modest and obvious, this simple change can save hours or days of debugging time over the course of a project.

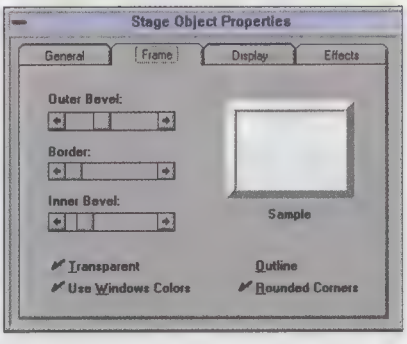
More and Better Then there's Digital Video Producer, a video editing utility similar to Adobe's Premiere. In fact, the only competitive factor not addressed in this version is the development metaphor: If you're wedded to icons and flowcharts, ToolBook is still probably not for you.

The new version also includes unique new features like automatic dithering, which eliminates palette flashing in 8-bit displays, CD-ROM optimization, a universal volume control, and Rich Text Format support. These features solve real programming problems and are currently unavailable in most competitive products.

In short, ToolBook 3.0 catches up and surpasses most competitors in features and functions while retaining its price advantage and royalty-free runtime arrangement. It's a must-buy for current ToolBook users. And at one-fifth the cost of traditional high-end tools, this new version should also lure developers from the competition. JAN OZER



New Metaphor: If you're a presentations builder or you work in flowchart-based multimedia development, Multimedia ToolBook's book-based metaphor doesn't come naturally. But once you've grasped it (and the tutorial really helps), it becomes a snap.



Staged Presentation: Multimedia ToolBook 3.0 contains a new Object called Stage Object to work with video, animation, and audio. Stage also controls window size, frame, and appearance through mouse controls rather than script commands—a big time-and-effort saver. It and the bundled video editor, Digital Video Producer, should make video handling especially easy. Also fixed in this version: AVI handling—it's now as easy as flipping channels on the TV.

FILEBOX

Multimedia ToolBook 3.0

Main Improvements: OLE support, a full text search-and-retrieval engine, drag-and-drop support, video support, scriptless animation, roll-your-own combo boxes.

Additional Utilities: Digital Video Producer, PalEdit, BitEdit, animation editor.

Runtime Royalty: None (competitors charge for runtime licenses).

$895
Asymetrix Corp.
(800) 448-6543, (206) 462-0501
Reader Service No. 622

The best way to organize people, places and things.

Get more done in less time and manage your contacts and activities more efficiently. Introducing WordPerfect InfoCentral, the intelligent information manager.

Using iConnect technology, InfoCentral connects information about people, places, things and events. It then displays the information in an easy-to-read outline that lets you see it from any perspective.

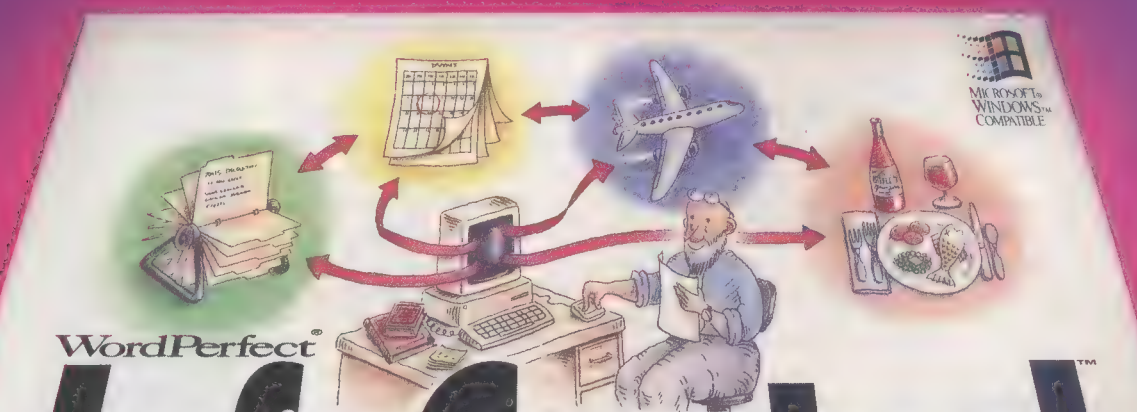
Information from any Windows application can be connected to items within InfoCentral. You can even manage your contacts and "to-do" lists using InfoCentral's calendar and address views.

InfoCentral also includes information bases (iBases) on consumer goods, computer products, travel, and wines.

InfoCentral. It's one of the many products you'll find on Main Street, the new family of easy-to-use software from WordPerfect Corporation.

Call 1-800-526-5208 or see your local retailer for more information.

WordPerfect®
Main Street.™
Bringing the best home.



WordPerfect®
InfoCentral™
Personal Information Manager v.1.0

New! SOFTWARE:
E-Mail Connection 2.0

All for One, One for All

USABILITY: *The best e-mail integrator ever.*
PERFORMANCE: *Connects to online services at high speeds.*
TECHNOLOGY: *Built-in support for a broad range of services.*
VERDICT: *Unique and immensely useful.*

You've got the Internet, CompuServe, and MCI Mail: You could spend your life online. Because e-mail is so complicated and time-consuming, you need a single Windows application that integrates mail services and automates mail messaging. Try ConnectSoft's new E-Mail Connection 2.0.

E-Mail Connection provides postal, fax, and multiple e-mail addresses for all the contact names inside and outside your company. You can reach out directly to major online services and LAN-based e-mail products. If you send e-mail, E-Mail Connection 2.0 is not only a boon, it's the only all-in-one e-mail package out there.

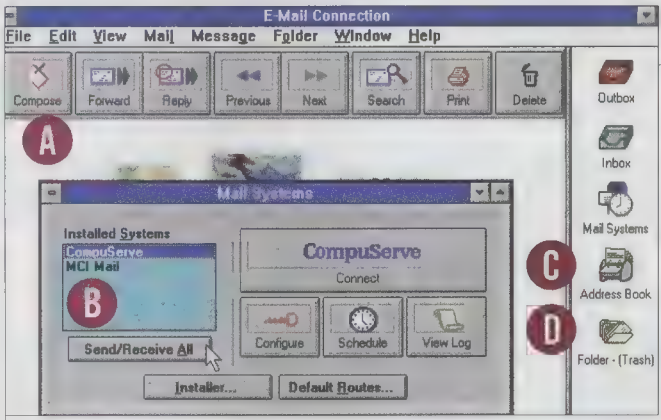
What about the Internet, America Online, GEnie, AT&T EasyLink, MobileComm, and automated faxing? E-Mail Connection links you to all those services and others using your choice of CompuServe, MCI, or Prodigy as gateways. Since the routing for these gateway services is built in, you just kiss all those confusing e-mail strings good-bye.

Inside Story E-Mail Connection isn't just for external e-mail services either. It provides a single interface for all your e-mail, including LAN-based e-mail like cc:Mail, Lotus Notes, and Microsoft Mail, or any package that uses Novell's MHS messaging protocol. That means you can send and receive messages on your company's internal e-mail system from E-Mail Connection, too. You can also send e-mail directly from mail-enabled applications, so the next time you're drafting a memo, you could send it to a colleague for comments without even leaving your word processor.

E-Mail Connection delivers on the largely unfulfilled promises of virtually every other e-mail front end that has come before it. You can save money by taking advantage of the options for offline message reading, composition, and replying. And you can schedule automatic message sending and retrieval to all supported online services and LAN-based e-mail.

Added Support Version 2.0 improves on the previous version by adding integral support for Prodigy, VIM (the messaging protocol for cc:Mail and Lotus Notes), 9,600-bit-per-second (bps) support for MCI Mail, 14,400-bps support for CompuServe and improved international access. Also new: the ability for one installation of the product to maintain databases and settings for multiple users with password protection, background uploads and downloads, and a long list of new destinations.

No other e-mail package comes close to the functionality and flexibility of E-Mail Connection 2.0. SWFTE's Wire provides similar services, but it offers a direct connection to only MCI. CompuServe's WinCim helps automate services on CompuServe only. There are no other packages that offer such complete integration with a wide range of online services. With this major new version, ConnectSoft has improved the usability of the product by reducing the number of mouse clicks it takes to complete many operations. If you juggle e-mail from two or more sources, this is a breakthrough product that automates the mail-management chores you put up with daily. Anyone who takes e-mail seriously should seriously consider E-Mail Connection 2.0. **SCOT FINNIE**



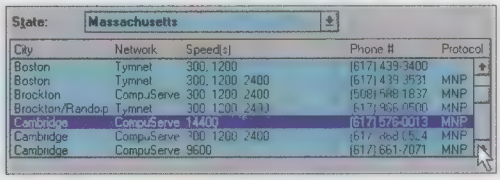
Get Connected: E-Mail Connection 2.0's new Window Bar places its tool icons in a convenient vertical bar, out of the way of the message area. The dialog boxes and toolbar functions have been streamlined for usability. But the real news is the new support for Prodigy, cc:Mail, and Lotus Notes. This program is, by far, the best e-mail integrator available.

A. Click and type! **Compose** takes you to the heart of your e-mail for creating your message.

B. Send and receive messages for all **installed services** in one fell swoop.

C. Within the **Address Book** you can automatically attach all addresses for incoming e-mails to your address list.

D. The **Folder** contains options for managing your e-mail messages.



E-Mail Anywhere: In addition to 14,400-bps support for CompuServe, E-Mail Connection 2.0's databases of online service numbers make it a snap to hook up from a hotel room in a strange city. Search for local numbers by area code or state, and click to select them.

FILEBOX

E-Mail Connection 2.0

System Requirements: 386 with 4MB of RAM (8MB recommended); 5MB of free hard disk space; a modem (for asynchronous services only); Windows 3.1; an account with CompuServe, MCI, or Prodigy for external e-mail; an e-mail package that supports MAPI, MHS, or VIM for LAN-based operation. If you're going to run Prodigy, you'll need Prodigy for Windows.

$99.95; $49.95 introductory price until September 1
ConnectSoft
(800) 234-9497
Reader Service No. 625

The easiest way to send and receive fax and data.

Now you can turn your office, den, or even your dining room table into a complete communications center with the new WordPerfect ExpressFax+.

ExpressFax+ combines fax and data communication into one easy-to-use package. You can send faxes directly from your computer to anyone, anywhere, right from the Windows program you're working in. Or hook up to the information superhighway with the ExpressFax+ communications feature.

With its TextBridge OCR technology from Xerox Imaging Systems, you can take the faxes you receive directly into your word processor for editing, so you never have to re-type. Add to this a phone book, group fax capability, and hundreds of other helpful features.

ExpressFax+. It's one of the many products you'll find on Main Street, the new family of easy-to-use software from WordPerfect Corporation.

Call 1-800-526-5208 or see your local retailer for more information.

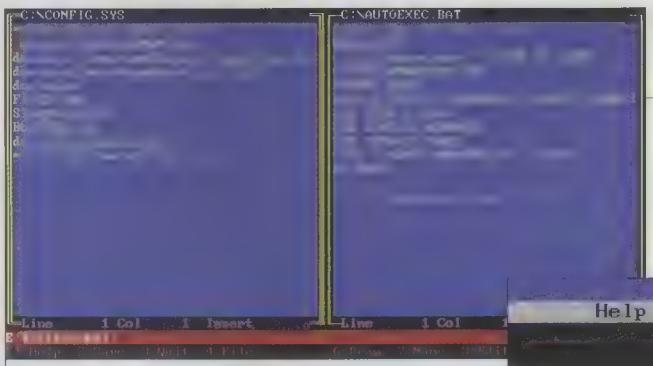
WordPerfect®
Main Street.™
Bringing the best home.

USABILITY: *Hog heaven for command-line junkies.*
PERFORMANCE: *Unequaled dynamic memory optimization.*
TECHNOLOGY: *Same old 640K barrier.*
VERDICT: *It's DOS. But it's good DOS.*

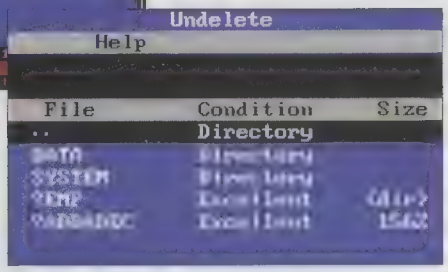
DOS and DOS: Separated at Birth

Remember *The Parent Trap*? That's the movie where Hayley Mills plays twin sisters who get split up between their parents, each of whom has sole custody of one child. Remember DOS? That's the operating system running most personal computers in the world, which now enjoys a similar custody arrangement, following the big IBM/Microsoft divorce. To make a long story short, Microsoft owns the even versions, IBM owns the odd ones. But it's the same DOS.

In the game of version leapfrog, IBM has just made the latest move by releasing PC DOS 6.3, which surpasses MS-DOS 6.2. It offers the same features available in Microsoft's release, and then some. For reasons beyond our comprehension, Big Blue hasn't been able to push this product to the forefront of PC operating systems. While MS-DOS is riding high, this lesser-known sibling is just a curious footnote on Egghead's shelves. It shouldn't be.



Interface Blues: The most interesting feature in PC DOS 6.3 is also its worst. The text editor (called E) edits and displays multiple files, and has usable features like Convert Case. But this horribly anachronistic program has no pull-down menus. To run a command, you must press Escape first, then type a cryptic command. It's well documented online, but you constantly need to press F1 to find a command or keystroke. WordStar users may be delighted to find some of the old familiar keystrokes. . . .



First-Aid Kit: The included Central Point Undelete is a true lifesaver, letting you undelete entire directories and their contents in a point-and-shoot fashion. You can even view the contents of deleted files in their native format before undeleting them. Too bad this file viewer is not available outside Undelete.

Squeeze to Fit Compression is PC DOS 6.3's greatest asset. After the Stac Electronics lawsuit forced Microsoft to pull DoubleSpace from MS-DOS 6.2, IBM's DOS looks more attractive than ever. IBM's SuperStor/DS offers effective, hassle-free compression. Like Stacker Anywhere, SuperStor/DS makes it possible to read a compressed disk on any computer, even when SuperStor is not running. It even includes password protection. And coming soon to PC DOS: the king of compression, Stacker itself. IBM has recently signed an agreement with Stac to bundle the more popular compression program with a future release.

Other new features in PC DOS 6.3 include a dynamic memory optimizer called RAMBoost that reconfigures your startup files whenever you make a change in your system. It works with multiconfig setups, optimizing each startup option separately. RAMBoost is only one of several Central Point and Symantec utilities included in this version; PC DOS 6.3 also includes a Central Point–licensed Undelete utility. The best news is that it's capable of undeleting directories (MS-DOS isn't). The Backup utility, another Central Point gem, offers enhanced support to numerous QIC and SCSI tape drives. Also included is Symantec's Defrag, which comes from its Norton Speed Disk utility.

PC DOS 6.3 matches many of the features that Microsoft introduced in MS-DOS 6.2: You get a very nice single-pass DISKCOPY, which saves you from having to swap disks continuously. Like MS-DOS, PC DOS has an optional interactive boot option, that lets you choose between a "clean boot" or an interactive step-through. And PC-DOS adds a file-overwrite warning to COPY, XCOPY, and MOVE.

Same Kernel Upgrading from MS-DOS 5.*x* or 6.*x* is a simple process. This is, after all, an identical twin. PC DOS 6.3 doesn't remove your existing \DOS directory files (unless they have identical names), so you can still use Microsoft's EDIT utility to upgrade if you prefer (IBM ships a less-capable editor with its DOS).

This is a decent DOS, and it has some very strong advantages. It's too bad that all the IBM divisions don't see it this way—IBM's own "clones," the Ambras, ship with MS-DOS. YAEL LI-RON

FILEBOX

PC DOS 6.3

System Requirements: For full installation on any x86 system: 512K of RAM minimum and 3MB of available hard disk space.

Key Utilities: Antivirus (detects over 2,000 viruses); Backup (supports 29 QIC and 20 SCSI tape drive models); and Program Scheduler, which automates DOS and Windows processes.

Drivers: PenDOS and PCMCIA.

$127; $77 upgrade from any DOS
IBM
(800) 342-6672
Reader Service No. 621

COREL DRAW!™ 5

The Best in Graphics and Publishing

CorelDRAW 5 combines the graphics power of CorelDRAW and the advanced publishing capabilities of Corel VENTURA 5 within an integrated user interface. With a revolutionary new color management system, major performance gains and hundreds of improvements, CorelDRAW 5 retains the ease of use for which Corel is renowned. From short design-intensive documents to long text-intensive publications, CorelDRAW 5 provides the ideal tool for illustration, publishing, photo-editing, presentations, charting and animation. Complete with six fully-featured applications and a host of useful utilities, including an internal PostScript interpreter, CorelDRAW 5 is the most exciting value-packed graphics and publishing software available!

Includes

- CorelDRAW 5
- Corel VENTURA 5
- Corel PHOTO-PAINT 5
- CorelCHART 5
- CorelMOVE 5
- CorelSHOW 5

New Highlights

- Integrated user interface
- Powerful color management
- OLE 2 "drag & drop"
- Amazing morphing effects
- Spectacular gains in speed & performance
- Internal PostScript interpreter
- Standard font downloading; PANOSE font substitution
- Hundreds of enhancements in PHOTO-PAINT: masking, floating objects, mesh warp & plug-in filters
- 90 chart types; 250 spreadsheet functions
- Live dimensioning, advanced 3D & precision features

plus

- 825 fonts
- 22,000 clipart images & symbols
- 100 high-resolution photos
- CorelTRACE 5, Corel MOSAIC 5, ARES Font Minder™, Adobe Acrobat Reader™, CorelQUERY, Corel CAPTURE, Zandar TagWrite™

THREE CD-ROMs INCLUDED

A to 5 UPGRADE $199 CD-ROM Version

3 to 5 UPGRADE $339 CD-ROM Version

CorelDRAW 5 $489 CD-ROM Version

DUSTIN DISCOUNT SOFTWARE

Plain Wrap Prices, Black Tie Service.

Monday thru Friday 6AM to 5PM PST
Saturday 10AM to 2PM PST

1-800-274-6611

Fax your order 24-hours

1-818-884-5310

20969 Ventura Blvd., Woodland Hills CA 91364 (818) 710-9175 Prices subject to change

Call for your free catalogue!

COREL®

613-728-3733 ext.24

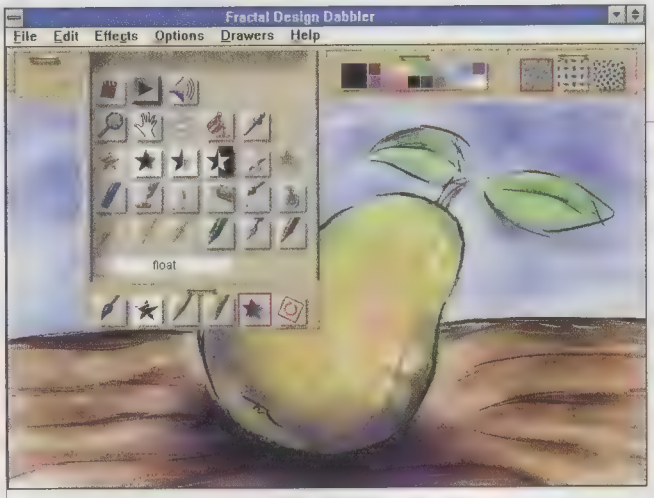
Circle 172 on reader service card.

A Stroke of Genius for Budding Artists

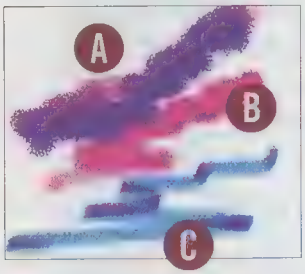
USABILITY: *Virtual canvas—couldn't be easier.*
PERFORMANCE: *Low-end requirements yield some excellent results.*
TECHNOLOGY: *Excellent simulation of real graphics media.*
VERDICT: *Beats spending a fortune on real art supplies.*

Do you doodle? Are the margins of your notepads adorned with tiny masterpieces? If so, then there's no question you'll want to check out Dabbler, a simple and seductive painting and drawing program from Fractal Design. Fashioned after the company's professional paint program, Fractal Design Painter, the $99 Dabbler lets budding artistes—or the merely curious—experiment with brushes, charcoals, paper textures, and other natural media to learn how to draw.

If you've ever held a crayon, you can draw with Dabbler. Its menus are clean and nearly wordless. Tools are stored in drawers (where else?) that open and close with an audible snap when you click on them. You also get the sound effects of drawing on paper, such as charcoal rasping lightly across the page—but you can turn this feature off if you prefer.



It's in the Drawer: Special effects and tools aren't labeled; beautifully crafted icons illustrate the effects that are available. Sample scraps of paper in another drawer let you select the surface texture and color you draw on—from canvas to watercolor paper.



Imitation of Life: Dabbler's drawing tools behave just as their traditional counterparts do on real paper. The chalk tool (A) leaves behind powdery marks that smudge when you rub them. Crayon (B) and pen marks (C) get darker as you apply additional layers. Fountain pens leave lines of varying width depending on the speed of your stroke.

Like the Real Thing Borrowing from Painter, Dabbler also has a great selection of special-effects tools. Wonder how famous artists might have interpreted your landscape? Simply click on the Impressionist or Seurat tools.

Want to turn your doodles into masterpieces? The opportunity is there for the taking. Included with Dabbler are several Walter Foster Publishing tutorials that teach the basics of traditional drawing. These tutorials aren't mere manual entries—you play them back from within the program to get a feel for how to translate theory into practice at your PC. For those who want more from Walter Foster, he's also responsible for the beautifully illustrated user's manual. And for those who don't know Walter Foster, his book (on which the manual is based), is a perennial favorite with art teachers and a best-seller in art supply stores. And if you want to critique your own technique, have an expert do it without looking over your shoulder as you work, or just plain show off, you can even record and play back your own brushstrokes.

Low Overhead Unlike professional drawing and painting programs such as Adobe's Illustrator, Corel's CorelDraw, or Fractal's specialized Painter, Dabbler doesn't require a lot of high-end hardware. It uses a dithered 16-bit color palette instead of 24-bit color, so image redraws are snappy—even on a 4MB Windows system. The only special requirement is a video card that supports 8-bit color (though 16-bit color looks much better). By contrast, most professional-level drawing programs require 16MB of RAM and a 24-bit graphics card, and set you back more than $400—more than four times what you can expect to pay for Dabbler. If you're confused by unfamiliar labels like emboss, invert, and air brush, you're in luck with Dabbler. Instead of words, the program uses icons to illustrate what its drawers of special-effects buttons do and it offers sample scraps of paper to select surface textures. Couldn't be easier.

As you may expect, Dabbler has some limitations. You can't create images larger than the size of the canvas onscreen. No matter. If you outgrow Dabbler, its images can be read and edited by the high-end Painter or exported to Adobe's Photoshop.

Not only is Fractal Design's $99 Dabbler one of the most inviting programs we've seen in many years, it's a great way to learn how to draw. Don't miss it. WENDY TAYLOR

FILEBOX

Dabbler

Minimum System Required: 386SX.

Minimum RAM Required: 4MB.

Monitor Required: 256-color (8-bit), extended VGA.

Pressure-Sensitive Tablets Supported: Wacom, Kurta, and CalComp.

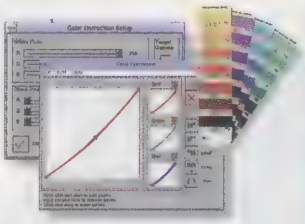
Number of Drawing Tools: 54.

Number of Paper Textures: 20.

$99
Fractal Design Corp.
(800) 297-2665, (408) 688-8800
Reader Service No. 626

Lynne - Graphic Designer :

"Color. I need rich beautiful colors in fine detail. The colors on the screen must match the printer. *And speed.* When I make a change, I want it on the screen instantly. Nothing less will do. "ATI's GRAPHICS PRO TURBO gives me the *best image quality* in 16.7 million vivid colors at high resolution 1280x1024 graphics and with superior speed and an easy-to-use color calibration feature."



Precise color calibration

Doug - Power User :

"*Only ATI's GRAPHICS PRO TURBO met MY spec!* I wouldn't settle for less for my new Pentium computer. It is not just the *fastest Windows performer* overall: 42M Winmarks with 256 colors and 28M Winmarks in true color. It also comes *loaded with Windows features,* such as the ability to instantly switch color and resolution without leaving Windows, and FlexDesk+, an advanced software panel to control color, resolution, desktop and motion video acceleration. ATI's GRAPHICS PRO TURBO has a complete set of *drivers for all the other operating systems.*"

Harry - Architect :

"Detail. My drawings and models have incredible detail. I need *resolution* so sharp, I could cut my finger on it. *Performance and color* are critical in both DOS and Windows. And, I want a graphics card that will *reduce eye strain.*

"ATI's GRAPHICS PRO TURBO gives fast true color at high resolutions under both DOS and Windows. It comes with fast and feature rich drivers for *my CAD applications.* After I'm done, I can unwind the day with an exciting game. Only *fast DOS performance* makes that possible."

True color and enhanced user controls for AutoCAD

For info by fax
(905) 882-2600 ext. 2
DOC # 1030

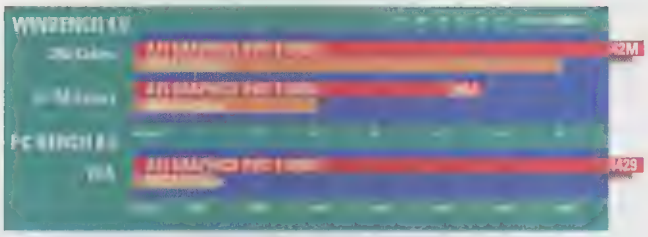
"I knew what I wanted."

GRAPHICS PRO TURBO™

- **64-bit VRAM Accelerator**
- **Fast 42M Winmarks (4.0)**
- **16.7M Colors at 1280x1024**
- **Enhanced Windows Utilities**

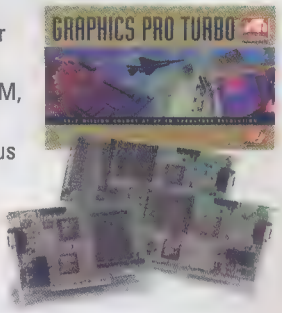
NOW SHIPPING!

WINDOWS AND DOS PERFORMANCE*



Outperforms other accelerators in Windows.

- Fast professional true color accelerator
- Up to 100Hz refresh rate
- Enhanced drivers for Windows, OS/2 PM, Windows NT, CAD and DOS
- Available for ISA, PCI or VESA Local Bus
- 2MB upgradable and 4MB versions available
- Five year limited warranty
- Priced at (2MB) **$449**** and (4MB) **$699****



mach64 — ***64-bit Accelerator***

ATI TECHNOLOGIES INC. — ***Perfecting the PC***

ATI TECHNOLOGIES INC.
33 Commerce Valley Drive East
Thornhill, Ontario Canada L3T 7N6
Telephone: (905) 882-2600 ext. 4224
Facsimile: (905) 882-2620
CompuServe: GO ATITECH
76004,3656

Copyright © 1994 ATI Technologies Inc ATI, GRAPHICS PRO TURBO and *mach64* are registered trademarks of ATI Technologies Inc. All other company and/or product names are trademarks and/or registered trademarks of their respective manufacturers. Features and specifications are subject to change without notice. Product may not be exactly as shown. Color support shown for 4MB versions. Features shown for Windows versions.* Performance levels may vary for other operating systems Benchmarks done on 2MB PCI graphics cards at 1024x768 in 256 colors and 800x600 in 16.7M colors 70Hz with 100MHz Pentium, 16MB memory, 420MB hard disk using Winbench 4.0 and PC Bench 8.0.** Suggested US retail prices, dealers may sell for less.

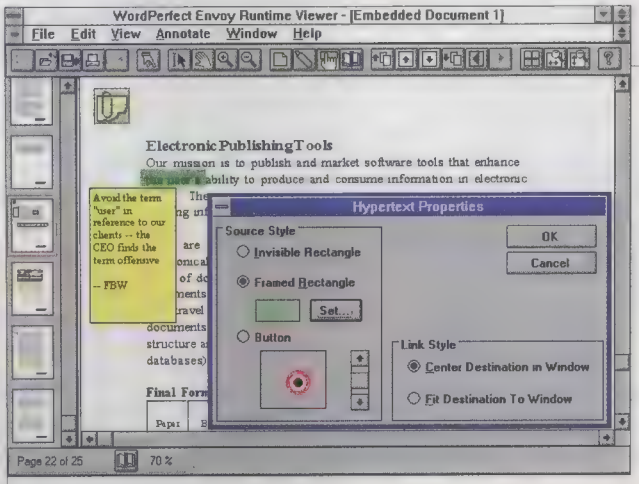
Circle 112 on reader service card.

A Better Paperless View of the World

USABILITY: *Drag-and-drop makes a difference.*
PERFORMANCE: *Runs at a fair clip; makes small files.*
TECHNOLOGY: *More tools than the competition.*
VERDICT: *Best document-distribution software yet.*

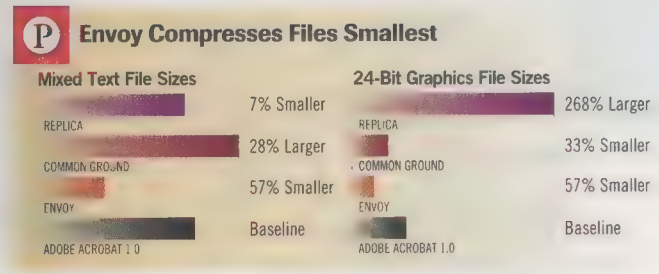
You're organizing a group publishing venture, using both PCs and Macs. You're creating font-rich, illustrated documents. How do you get your document e-mailed intact to everyone who needs to see it? Adobe Systems' Acrobat? Too pricey. Farallon Computing's Replica? Too limited. No Hands Software's Common Ground? Doesn't support annotations. Just when you were about to compromise, along comes WordPerfect's entry into the portable document field: Envoy.

At $189, Envoy is not the price leader in that niche—Common Ground and Replica are both cheaper and they offer many of the same selling points. Envoy, like Common Ground and Replica, has modest system and disk requirements compared to the voluminous Adobe Acrobat 1.0. But unlike Acrobat, the runtime viewer can be distributed without restriction.



Hitting the Hot Spots: As a group-publishing tool, Envoy's a dream. You can make brief notes, add long hypertext links, and highlight text. Cut to the chase with the bookmark feature, or click on the thumbnails running along the left or top of your screen to beam straight to another page.

Make Files Smaller: When you're looking to set up e-mail or online distribution, small is beautiful—and Envoy crunches files better than the competition.



One Step Beyond To create an Envoy document, you print using a special driver—this is how all these electronic distribution products work. But Envoy's features go beyond those of Common Ground and Replica—and, in some cases, even the primo Acrobat. With Envoy, you can annotate documents using advanced tools—highlighter pens, embedded OLE objects, and yellow notes. Acrobat provides similar tools, but you'll have to outfit each pair of eyes reading your document with Acrobat's $50-per-user Reader. Even then, you won't get Envoy's unique highlighter pen or note properties, which identify who left what notes on the document.

Envoy offers a wealth of navigation tools, too. You can maneuver around the document by searching for text, jumping to pages by number, or clicking on thumbnails. For more precise movements (with a little work up front), you can add and jump to bookmarks or set up hypertext links.

Drag and Drop Racer Envoy has one feature you won't find in the competition: the variety of ways to create a portable file. When Envoy created files using a print driver in our tests, its driver was faster than any other we clocked, with one exception: Replica "printed" a multifont, multiple graphic compound document faster. But you can also import registered files from within the Envoy Viewer, or drag and drop files onto a minimized Viewer icon.

Despite its speed and features, Envoy does have some drawbacks. Unlike Acrobat or Common Ground, Envoy cannot give you output right out of the box from an application that contains EPS images, such as PageMaker. You'll need to add Zenographics' ZScript or another third-party PostScript interpreter to handle the EPS files. In addition, Envoy's pricier than Common Ground and Replica, so if you don't need fancy annotations or zoom levels, you just might be spending too much.

Should you buy? That depends. With the next rev of Adobe's Acrobat just around the corner, PostScript junkies may want to wait to comparison shop. But if you need faithful, well-compressed files to pass between PCs and Macs—along with annotation modes, but not PostScript interpretation—Envoy's the obvious choice of the current batch. MATTHEW J. LAKE

FILEBOX

Envoy

Main Competitors: Adobe's Acrobat, Farallon's Replica, No Hands' Common Ground.

Portable File Creation Techniques: Print driver, drag-and-drop, file import.

Markup Features: Hypertext links, notes, virtual highlighter pen, iconized notes, OLE 1.0 client.

Navigation Techniques: Clickable thumbnails, Find dialog, bookmarks.

System Requirements: 386, 500K of free memory, less than 1MB of disk space.

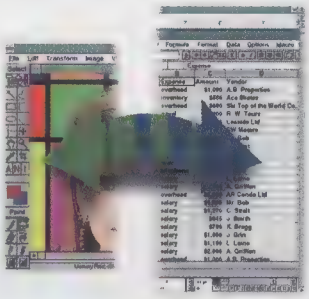
$189
WordPerfect Corp.
(800) 321-4566
Reader Service No. 623

Paul - Manager/Parent :

"I needed a performance boost for my PC. It took a long time for my charts and presentations to appear on the screen. The colors were flat and limited. And my son's games ran slowly. But, I wasn't ready to buy a whole new system.

"Fortunately, I got great advice. For *just $299***,* I got ATI's GRAPHICS XPRESSION. It revived my whole system.

"My friend had one. Windows snapped open quickly. Charts popped up on his screen. The *blazing speed,* 37M Winmarks*, was incredible. He said it offered *best value for price/performance.* And the improvement in color graphics and detail were most impressive.



WinSwitch changes color and resolution without leaving Windows

"Then, he showed me the features. WinSwitch allowed him to switch between true color mode or high resolution mode without exiting Windows. And ATI's FlexDesk+ software gave him *total control* over color, desktop size, resolution and even motion video acceleration.

FlexDesk+ easy control of desktop settings

"Finally, he told me it was the only affordable 64-bit accelerator for my ISA system. I rushed out to buy one. *Installation was easy.* There were no switches to set and the software guided me through the installation process. And I was amazed, it even came with a complete set of drivers for Windows, Windows NT, OS/2, CAD and DOS.

"Best of all, my PC now runs much faster in Windows, DOS and games. I almost never see that Windows hour-glass. GRAPHICS XPRESSION. At only $299, it is still great advice."

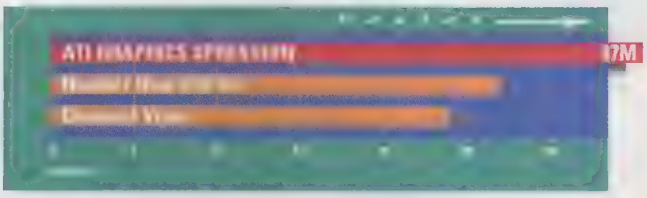
"I got the advice I needed."

GRAPHICS XPRESSION™

- **Affordable 64-bit Accelerator**
- **Fast 37M Winmarks (4.0)**
- **Best Price / Performance Value**
- **Instant Windows Mode Switching**

NOW SHIPPING!

WINDOWS PERFORMANCE - WINBENCH 4.0*



Outperforms other accelerators in Windows and DOS

- Resolutions up to 1280x1024 non-interlaced
- Full acceleration in 256 to 16.7M colors
- Comes with enhanced driver support for Windows, OS/2 PM, Windows NT, CAD and DOS
- Up to 75Hz refresh rate
- Available for for ISA, PCI or VESA Local Bus
- 2MB DRAM memory
- Five year limited warranty
- Priced at only **$299****

mach 64 — *64-bit Accelerator*

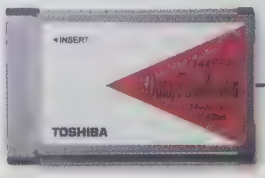
ATI TECHNOLOGIES INC. — *Perfecting the PC*

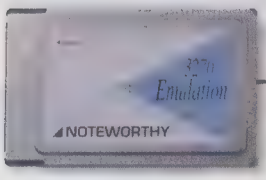
ATI TECHNOLOGIES INC.
33 Commerce Valley Drive East
Thornhill, Ontario Canada L3T 7N6
Telephone: (905) 882-2600 ext. 4223
Facsimile: (905) 882-2620
CompuServe: GO ATITECH
76004,3656

Copyright © 1994 ATI Technologies Inc. ATI, GRAPHICS XPRESSION and *mach64* are registered trademarks of ATI Technologies Inc. All other company and/or product names are trademarks and/or registered trademarks of their respective manufacturers. Features and specifications are subject to change without notice. Product may not be exactly as shown. Available colors dependent upon resolution mode. Features shown for Windows versions.* Performance levels may vary for other operating systems. Winbench 4.0 done on 2MB PCI graphics cards at 1024x768 in 256 colors at 70Hz with 100MHz Pentium, 16MB memory, 420MB hard disk. ** Suggested US retail prices, dealers may sell for less.

Circle 113 on reader service card.

Toshiba's ultra-convenient, credit card sized Noteworthy™ PCMCIA expansion options tailor your system to your changing needs.





T4800CT

T4700CT

T4700CS

Toshiba notebooks combine 486 power with their renowned TFT or STN color.

The inside story on flexibility and expansion.

Enjoy all the conveniences of desktop computing, and take all the essentials with you when you travel.

Get one computer that can meet your demands even when your demands keep changing. Desktop docking and PCMCIA expandibility make Toshiba notebooks among the most versatile computers you can buy.

Replace your desktop system with a Desk Station IV™ for instant connections to your printer, mouse, full-size keyboard, monitor and network. Just snap in your Toshiba notebook and you have all the processing power, memory, and storage you need. No more swapping files back and forth; no more dual software installations.

The T4800CT and T4700C Series also give you two PCMCIA slots–a 16mm and a 5mm–that let you customize your system whenever you want. You can easily add memory and storage, install fax/modems, even become a node on the network. Choose from Toshiba's broad line of Noteworthy PCMCIA expansion cards, or more than 50 other compatible PCMCIA cards.

So when you decide to change computers, get the one that keeps changing with you. Toshiba.

Call 1-800-457-7777 for a dealer near you.

In Touch with Tomorrow

TOSHIBA

© 1993 Toshiba America Information Systems, Inc. All products indicated by trademark symbols are trademarked and/or registered by their respective companies.

Circle 215 on reader service card.

Ecco Reverberates in the Workgroup

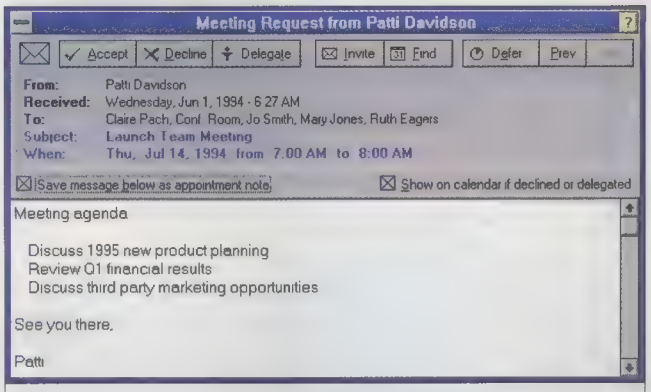
USABILITY: *Smooth once you learn the basics.*
PERFORMANCE: *A snappy performer on a 486.*
TECHNOLOGY: *File replication, e-mail compatibility.*
VERDICT: *A great PIM with superb workgroup features.*

Ecco has always been the black sheep of personal information managers (PIMs), an outline-based oddball in a flock of boring, Rolodex-like lambs.

Version 1.1 of Ecco was a fine single-user product. The new entry—Version 2.0—handles enterprise-wide scheduling using MAPI, CMC, VIM, Lotus Notes, MHS, and other mail programs. Not sure if everyone can meet on Wednesday? Ecco can help you find an available meeting time and room for the group.

The product integrates into your existing e-mail infrastructure nicely. The Meeting Mail feature lets you carry on a dialog with other e-mail users about meeting topics and agendas. Ecco Professional 2.0 will also act as an alternate interface to Microsoft's Schedule Plus.

Version 2.0 of Ecco allows for multiuser shared calendars, phone books, and outlines, and it lets you customize data with a host of access options for public and private views.



Meeting Madness: Ecco Professional 2.0 can schedule meetings over a variety of e-mail services. You can even attach Ecco outline notes, such as a meeting agenda, to your mail so that everyone will be prepared at meeting time. Not sure when everyone can meet? Let Ecco search and find out for you.

Another welcome change is the newly added file synchronization capability. This lets you set up master and replica files, and have changes made to the master file reflected in all the replicas (and vice versa)—perfect for those who want to make sure their home system is current with their office machine. You can synchronize files via e-mail, floppy disk, or LAN. Synchronization takes place at the data-field level so you won't be replicating a lot of old information.

Also new is a direct interface to Delrina's WinFax Pro, new and customizable phone book forms, and time/date stamps.

Ecco's standalone improvements with Version 2.0 aren't earth shattering. But the workgroup features of the new version elevate this product into a whole new realm. If you're looking for a capable workgroup information manager (a WIM?), give Ecco Professional 2.0 a look. JON PEPPER

FILEBOX

Ecco Professional 2.0

Requires: 386 processor, Windows 3.1, 4MB of RAM, at least 4MB of free hard-disk space.

Competitors: Polaris PackRat, Jensen-Jones Commence, and Lotus Organizer.

$279
$49.95 for competitive upgrade
Arabesque Software
(800) 457-4243
Reader Service No. 631

Visio Express for Microsoft Office

Shapeware's Suite Plug-In

USABILITY: *If you can use Office, you can use this.*
PERFORMANCE: *Weaker than Visio 2.0, but better integrated.*
TECHNOLOGY: *OLE 2.0.*
VERDICT: *Drag it into Office, drop it on your hard disk.*

Graphical tools have been the prima donnas of software for too long—they produce great results, but they're tough to work with. They're not team players. When you need a workaday program not too proud to work closely with the Microsoft Office suite, what you need is Shapeware's Visio Express for Microsoft Office.

Based on the stellar Visio 2.0 (reviewed in New! November 1993, page 81), Visio Express supports OLE 2.0, and its menu system and toolbars mimic those of Office. And Shapeware won't get slapped with a look-and-feel lawsuit, either. (In the coming months, Peachtree, Micrografx, and a couple dozen other companies will follow suit, each with Microsoft's blessing.) Because Visio Express operates inside Office applications, creating a flowchart or simple graphic while constructing a document is no harder than working within a PowerPoint or Excel dialog box.

Learning curve? There isn't one. Use Visio Express for the quick graphical hit—a flowchart here, a box there. It's ideal for the business user looking to spruce up that memo. Unfortunately, Visio Express is a pared-down version of its progenitor, Visio 2.0. It doesn't support multiple-page drawings and provides only 240 shapes—less than half of Visio 2.0's 600. But then, it costs significantly less: $79 to Visio 2.0's $129.

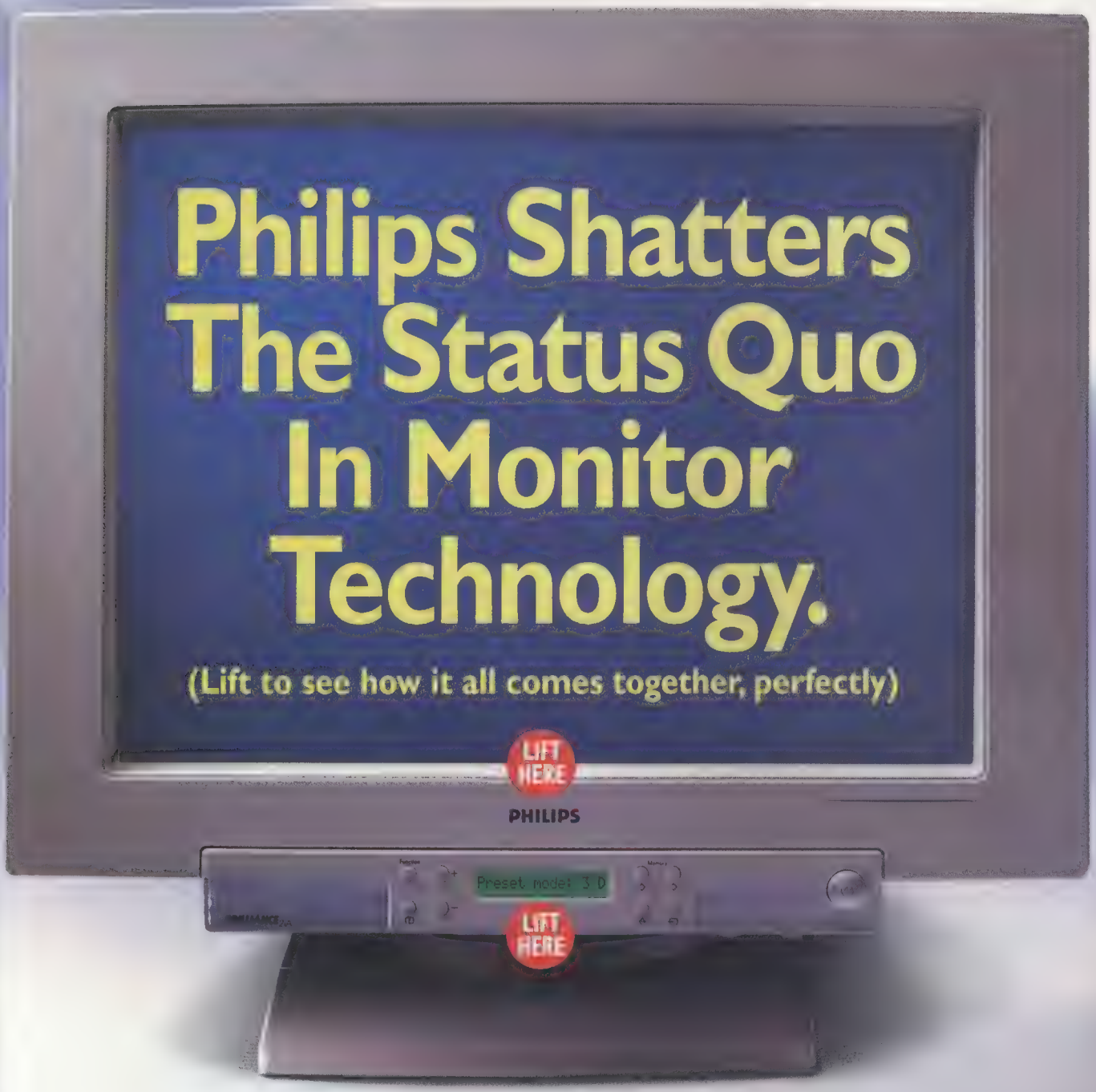
Visio Express for Microsoft Office is a great little graphical tool. ILAN GREENBERG

FILEBOX

Visio Express for Microsoft Office

System Requirements: 386 with 6MB of RAM.

$79
Shapeware Corp.
(800) 446-3335, (206) 521-4500
Reader Service No. 632



Philips Brilliance™ 21A Monitor with new CyberScreen® technology dramatically reduces beam misconvergence and increases color and brightness uniformity to give you the best on-screen image you've ever seen.

For more information, call toll-free

1-800-835-3506

BRILLIANCE™
HIGH RESOLUTION MONITORS

Another First From Philips

PHILIPS

Introducing Philips Brilliance™ 21A With CyberScreen®

- *Brightness uniformity over the screen of 90% or more. For traditional monitors, uniformity is only 75% or less.*
- *Superb color uniformity and accuracy. (x and y coordinates change no more than +/- 0.006 over the screen, as compared with +/- 0.015 for traditional monitors.)*
- *Exclusive Magnetometer maintains constant magnetic field so there is no sensitivity to north, south, east or west orientation.*
- *Maximum misconvergence of 0.2 mm. (traditional technology is .35 mm.)*
- *High resolution up to 1600 x 1280.*
- *High refresh rates up to 76 Hz in 1280 x 1024 mode*.*
- *Large flat square screen with fine 0.28 dot pitch.*
- *Black Matrix Invar tube.*
- *Autoscan with high 30-82 kHz scanning rates and 150 MHz video amplifier bandwidth.*
- *Low-emissions comply with MPR-II and ISO-9241 standards.*

BRILLIANCE™
HIGH RESOLUTION MONITORS

Call 1-800-835-3506
In Canada, 1-800-387-0564

CMP CHANNEL ADVOCATE

BEST OF COMDEX/Fall '93 BVIE Finalist

Another First From Philips

PHILIPS

**Actual refresh rates may vary by video controller and/or software.*
CyberScreen Technology is a registered trademark of Philips Electronics, N.V.
© 1994 Philips Consumer Electronics Company, A Division of North American Philips Corporation.

Simply LANtastic

Trip the LAN Fantastic

When it comes to peer-to-peer networks, lighter is better. The best example of this is Artisoft's new low-end peer network, Simply LANtastic. Aimed at the growing number of small-office LANs, it is more than a hobbled version of Artisoft's powerful and popular LANtastic 5.0 peer-to-peer network package. (LANtastic 6.0, reviewed in New! June, page 89) is another creature entirely.)

Simply LANtastic is inexpensive. The $299 starter kit provides all the hardware and software you need to set up and run a two-node network. A single-node add-on pack lists for $149. Simply LANtastic also offers three security levels—full access, read-only, and no access. It also comes with a no-frills e-mail module for your basic messaging needs.

Easy Hardware The highlight of this entry-level system is that Artisoft has made installing the network hardware—usually the biggest stumbling block for novices—as easy as falling out of a tree. Instead of the unwieldy connectors that come with most Ethernet adapters, this card has two sockets for standard RCA ⅛-inch pin connectors, like the kind you find at Radio Shack. You plug the supplied cabling, which is pliable and thin, into either socket. Artisoft also plans to release a parallel-port version of the new adapter for notebook PCs.

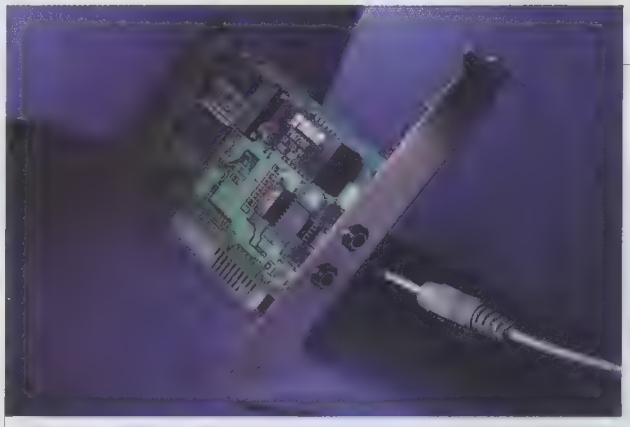
Once it's set up, Simply LANtastic is a breeze to use—its Windows controls are less complex than the average computer game, and even the DOS version is completely intuitive. And unlike Microsoft's Windows for Workgroups, Simply LANtastic lets you access the network from DOS or Windows, without having to manually load and unload drivers.

Despite its obvious strengths, Simply LANtastic falls short in software installation. It's easier to set up than other peer-to-peer networks, but Artisoft did not make installing software as easy as installing the hardware.

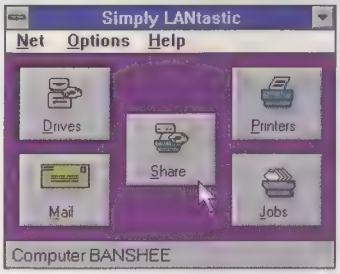
The installation routine walks you through the process of setting up network drive letters and connecting to shared printers. But it doesn't let you create names for devices you intend to share with others. Nor does it ask you which PC on the network should be the post office for e-mail. These omissions may confuse many first-time network installers.

Memory Hog Also missing are a few Windows features we've come to expect, such as context-sensitive help buttons on dialog boxes and right-mouse–button pop-up menus. Other drawbacks include copy protection, the inability to have separate workstation and user names, and a limit of eight characters in the names of shared-devices. Simply LANtastic's net drivers use none of your 640K of low memory, but they do hog 65K or more of high RAM.

Compared with Windows for Workgroups, Simply LANtastic has the advantage of not mucking up your Windows installation with a lot of extra stuff you might not need. It's also available with excellent hardware, and it provides seamless support for both DOS and Windows. And then there's the easy migration path to LANtastic 5.0. It almost lives up to its "Simply" name—only the software installation needs improvement. Still, we give it the nod. It's the easiest way there is to network two computers, and it won't cost you a fortune. SCOT FINNIE



Piece of Cake: Simply LANtastic's hardware is something else. It starts with a tiny new self-configuring, self-terminating 10-megabit-per-second Artisoft Ethernet card. There are no jumpers to set or cables to cut. Need more wiring? Pop down to the local Radio Shack and pick up some headphone cable. Simple.



Point and Click: Simply LANtastic's self-explanatory main control panel has five icon-activated buttons for sharing your devices, accessing drives, and so forth.

USABILITY: *Drag-and-drop connections to network servers and resources.*
PERFORMANCE: *Full Ethernet bandwidth on a shoestring.*
TECHNOLOGY: *Proprietary hardware eases installation.*
VERDICT: *It's the best bet for small offices, but there's room to grow.*

FILEBOX

SIMPLY LANTASTIC

Starter Kit: The $299 starter kit includes two self-configuring network adapters and cabling.

Upgrades: Options include a single-node add-on pack. You can add as many as 30 users on a Simply LANtastic network. The system can act as a client in a LANtastic 5.0 or NetWare network.

Security: Three levels of security include full access, read-only access, or no access to server resources.

$299 (two-node starter kit)
Artisoft
(800) 233-5564
Reader Service No. 641

PHOTOGRAPH BY GIAMPIERO BENVENUTI

Data is your computer's most important passenger.

Think of all the time and money you have invested in creating and storing the information on your computer. Now think of what would happen if one day it all was lost. Let's face it. It's an imperfect world and accidents happen. Fires, floods, earthquakes, theft, power failure, hard disk crashes and just plain human errors can cause your valuable data to somehow disappear. Protect your investment by backing up your data regularly. with Colorado Tape Backup Solutions.

With capacities from 120 MB up to 4 GB, there's a solution that's right for you. Colorado Tape Backup is easy, fast, reliable and costs less than a comparable stack of floppy disks. And Colorado is recommended more than all other backup systems combined, earning dozens of industry awards. Save time. Save money. Save your computer's most important passenger: your data. Explore Colorado Tape Backup Solutions today.

Drive safely.

Complete Tape Backup Solutions

Call for more information and FREE literature

1-800-451-0897

Extension 730

PCC
PC Computing
BEST 200
June 1994

COLORADO® MEMORY SYSTEMS
A Division of Hewlett-Packard Company

©1994 Colorado Memory Systems. All Rights reserved. Colorado and Jumbo are trademarks of Colorado Memory Systems. All other trademarks are property of their respective companies. CRA2/94

Circle 184 on reader service card.

A Reasonable Facsimile Thereof

Ah, the convenience of the fax machine. Trudging down the hallway, sorting through piles of faxes to find the one meant for you. Having sheets of curly paper turn brown on your desktop—or better yet, paying through the nose to put a fax modem on everyone's desktop. With technological luxuries like these, who needs hardships?

Fortunately, there is a better way to manage your workgroup's faxes: a fax server. It's fast, uses no paper, and everyone can share it in your office, just like a network printer. We haven't seen a better fax server than Castelle's FaxPress 1000. This nondescript gray box installs in minutes and comes with all the software you need to let DOS or Windows users send and receive faxes right from their desktops.

Twelve Minutes Worried about installing and maintaining a network device? Don't be. Our elapsed time from opening FaxPress's box to sending the first fax was 12 minutes—and we never even cracked the manual. Try that with an internal fax modem and its software.

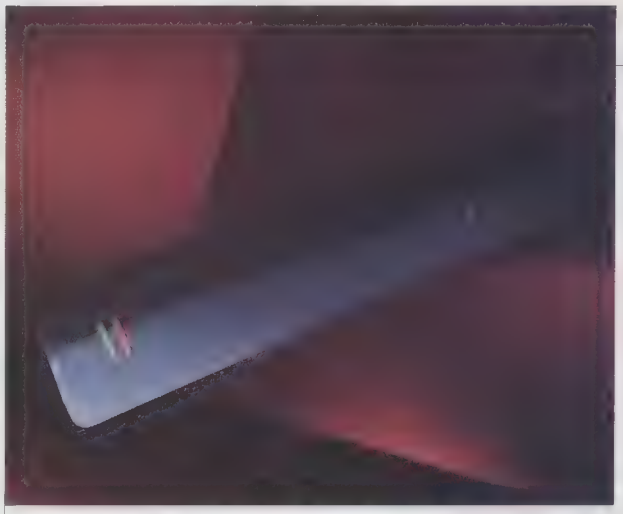
Maintaining FaxPress is also simple. Take the hardware, for example. The tiny box has four indicator lights to let you know how it's doing. Generally, we consider it better to have more status LEDs, but many fax servers go overboard, with 20 or 30 LEDs and cryptic abbreviations to go along with them. FaxPress keeps it simple: Green light means everything's OK, red light means something's the matter (consult the manual to see what the flashing light sequence means), and two other lights let you know when it's sending faxes or talking to the network.

The FaxPress management software is also easy to use in both Windows and DOS. An administrator can add FaxPress users (including personal telephone numbers and relevant information), look at and delete jobs in the queue, change priority settings, route faxes, and create cover pages. FaxPress also includes utilities to unload user information from a Novell NetWare server's bindery.

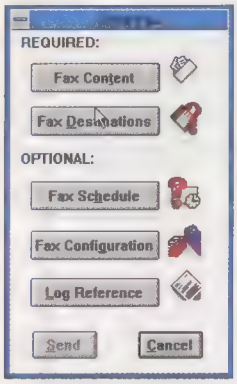
Cover Me The two most intriguing features of FaxPress are its cover page utilities and its automatic fax routing. You can create cover pages that include any kind of graphics and with any font installed on your system, and FaxPress will automatically fill in the To and From fields when the fax is sent.

The automatic fax routing feature, however, isn't quite as flexible. We had hoped for an OCR utility that would magically read incoming faxes and route them to the right user, but OCR technology still can't handle low-resolution faxes. FaxPress automatically routes faxes to individual users, but it does so by using identification numbers that the sender must dial on the keypad after FaxPress has picked up the phone.

The FaxPress 1000 is a rarity in our experience: a hassle-free network communication device. If your workgroup's fax setup could use some fine-tuning, this is the solution for you. JOHN MONTGOMERY



Read My Blips: Rather than burdening you with umpteen flickering lights with cryptic abbreviations, FaxPress keeps it simple. The tiny box has four indicator lights that let you know how it's doing. A green light means everything's OK, a red light shows a problem, and the manual tells you what flashing light sequences mean. Two other LEDs tell you when the unit is sending faxes or talking to the network.



On Schedule: The FaxPress comes with simple print redirectors for DOS and Windows. When you print from your application, you can just select the FaxPress like any other printer, and it will prompt you for an address, let you edit your cover page, and even schedule a time for the fax to be sent.

USABILITY: *Speedy installation, painless maintenance.*
PERFORMANCE: *Invisible. Zap your faxes and forget about them.*
TECHNOLOGY: *Doesn't read handwriting for automatic routing.*
VERDICT: *Saves time, money, paper, and aggravation. A winner for any office.*

FILEBOX

FAXPRESS 1000

Networks Supported: NetWare over Ethernet only.

Number of Phone Lines Supported: One.

Optional Module Prices: $295 for print server or MHS or cc:Mail gateways.

Big Brother Model: The FaxPress 2000 comes with one, two, or four phone lines, and supports both Ethernet and Token Ring NetWare and LAN Server networks. Prices start at $2,995 for the Ethernet version and $3,295 for Token Ring.

Competition: Other turnkey solutions include RightFax's eponymous OS/2-based fax server and OAZ Communications' NetFax, which is more limited in its e-mail and fax routing.

$1,995
Castelle
(800) 289-7555
Reader Service No. 642

PHOTOGRAPH BY MARIO PARNELLI

AT AMBRA,™ WE KNOW that when you buy a PC, you want it all. Performance, expandability and upgradability. And all at a very competitive price.

But there's more to a PC purchase than just the PC itself. Consider the company you're buying from. Do they stand behind their products? Will they even be around in a few years?

All good reasons to buy from AMBRA, an IBM® subsidiary.

Compare our leading-edge technology. Compare our prices–now lower than ever. And when it comes to unwavering, unsurpassed IBM service and support, there is no comparision.

It's for reasons like these that industry analysts say we're on course to become one of the top players in personal computing.

It's nothing less than complete commitment to you, our customer.

Desktop models shown above. Mini-tower and other configurations also availa

Free First-Year IBM Onsite Service for Desktop Systems[1]

D466 I/VL $1799

Business Lease: $65/month

- ▲ 486DX2/66MHz Processor, Desktop
- ▲ Upgradable to PCI and Pentium Technology
- ▲ 256KB L2 Cache, Write-Back
- ▲ 4MB RAM, Max: 64MB
- ▲ 440MB IDE Hard Disk Drive
- ▲ 14" SVGA Color Monitor-LR
- ▲ VESA Local Bus Graphics Accelerator 1MB
- ▲ VESA Local Bus IDE Hard Drive Controller
- ▲ 4 16-bit ISA and 1 32-bit VL Bus Slots
- ▲ 3.5" 1.44MB Diskette Drive
- ▲ 5 Drive Bays
- ▲ High-Speed Serial Ports-16550 UART
- ▲ Parallel Port, ECP/EPP Supported
- ▲ Lexmark™ 101-Key Keyboard
- ▲ MS-DOS® 6.2, Windows™ 3.1, Mouse

THE AMBRA ASSURANCE

- ▲ *Toll-free IBM technical support, available 24 hours, 7 days a week.*
- ▲ *Free first year IBM onsite service.*
- ▲ *30-day, airtight, money-back guarantee.*
- ▲ *One-year warranty on parts and labor.*
- ▲ *I/VL systems tested and XXCAL Certified.*

AMBRA
AN IBM SUBSIDIARY

CALL NOW.

©1994 AMBRA Computer Corporation. The AMBRA logo and logotype are trademarks of AMBRA Computer Corporation. AMBRA is a trademark of ICPI Ltd. and used under license therefrom. All other brands and product names are registered trademarks, trademarks or service marks of their respective holders. Please call for details regarding AMBRA's money

THE FASTEST 486'S EVER.

(And we're not the only ones saying it.)

In the words of the April 4, 1994 issue of *InfoWorld*,
"...the D466 I/VL [is] the fastest 486DX2/66 we've tested."

You have our word on it, too. This is advanced technology that pushes 486 speed to the max. From AMBRA. The D466 I/VL and D4100 I/VL integrate powerful components right on the motherboard, to exploit every last bit of raw processing power. Upgrade to Pentium.™ Upgrade from VESA® to PCI local bus–just pop in an optional riser card. To put this power to work for you, order now. But hurry. At this speed, they'll be going quickly.

intel inside

D466 I/VL-Best Buy $2499
Business Lease: $91/month

- ▲ 486DX2/66MHz Processor, Desktop
- ▲ Upgradable to PCI and Pentium Technology
- ▲ 256KB L2 Cache, Write-Back
- ▲ 8MB RAM, Max: 64MB
- ▲ 440MB IDE Hard Disk Drive
- ▲ 14" SVGA Color Monitor-LR
- ▲ VESA Local Bus Graphics Accelerator 1MB
- ▲ VESA Local Bus IDE Hard Drive Controller
- ▲ Double Speed Multisession CD-ROM Drive
- ▲ 16-bit Sound Card and 2 Speakers
- ▲ Borland Office™ on CD
- ▲ Productivity Pack Software
- ▲ 4 16-bit ISA and 1 32-bit VL Bus Slots
- ▲ 3.5" 1.44MB Diskette Drive
- ▲ 5 Drive Bays
- ▲ High Speed Serial Ports-16550 UART
- ▲ Parallel Port, ECP/EPP Supported
- ▲ Lexmark 101-Key Keyboard
- ▲ MS-DOS 6.2, Windows 3.1, Mouse

D4100 I/VL $2799
Business Lease: $102/month

- ▲ 100MHz IntelDX4 Processor, Desktop
- ▲ Upgradable to PCI and Pentium Technology
- ▲ 16KB L1, 256KB L2 Cache, Write-Back
- ▲ 16MB RAM, Max: 64MB
- ▲ 720MB IDE Hard Disk Drive
- ▲ 14" SVGA Color Monitor-LR
- ▲ VESA Local Bus Graphics Accelerator 2MB
- ▲ VESA Local Bus IDE Hard Drive Controller
- ▲ 4 16-bit ISA and 1 32-bit VL Bus Slots
- ▲ 3.5" 1.44MB Diskette Drive
- ▲ 5 Drive Bays
- ▲ High-Speed Serial Ports-16550 UART
- ▲ Parallel Port, ECP/EPP Supported
- ▲ Lexmark 101-Key Keyboard
- ▲ MS-DOS 6.2, Windows 3.1, Mouse

Get a FREE upgrade from a 14" to a 15" FST color monitor[2]

1 800-239-5734

AMBRA
AN IBM SUBSIDIARY

[1] Guarantee, warranty and credit terms. Lease based on 36 months, offered by IBM Credit Corp. Onsite service may not be available in certain locations. Prices may differ in Canada. Prices do not include shipping. Return shipping and insurance charges are the responsibility of the customer. Purchased by 7/31/94. [2] Limited time offer expires 7/31/94. Applies to 60MHz or faster processors.

Welcome to the virtual office. It's as big as the earth.

At AMBRA,™ an IBM® subsidiary, we're making it possible for business people to work anytime, anywhere. At home, at 30,000 feet, or anywhere in between.

It means you have the flexibility to get work done on the run to, and from the office (the real one, that is).

It means you don't have to go in on the weekend.

It means, with fax and modem technology, you can always be in touch with your business, no matter where you are.

And when you need it, you can always be in touch with 24-hour, toll-free IBM technical support.

What's more, you can set up your virtual office for a lot less than you'd expect.

That's why AMBRA notebooks are ideal for people on a fast track.

THE AMBRA ASSURANCE

- *Toll-free IBM technical support, available 24 hours, 7 days a week.*
- *30-day, airtight, money back guarantee.*
- *One year warranty on parts and labor*
- *Portable systems tested and XXCAL Certified.*

AMBRA
AN IBM SUBSIDIARY

These are the fastest notebooks you'll find. Period. From AMBRA, an IBM subsidiary.

Powered by an incredible 100MHz (or 75MHz) DX4 processor, you'll zoom right along.

And with either a 10.3-inch dual scan or a 9.5-inch active matrix screen, you'll see sharp, vivid color.

These notebooks sound better still when you consider the advanced audio features.

These notebooks pack a lot of power into a scant 6.7 pounds.

Record reminders. Or add sound clips to presentations.

With all this power, AMBRA notebooks are even more impressive when you consider that they check in at a lightweight 6.7 pounds.

To order, just give us a call now. Clearly, there's no better notebook.

Full size keys mean fewer typos. And that should speed things up even more.

ACTIVE MATRIX WITH VISION

N100T-450 $5299
Business Lease: $192/month

- ▲ 100MHz Intel® DX4
- ▲ 450MB Hard Disk Drive, upgradable
- ▲ 9.5" Active Matrix TFT Color Display with Local Bus Video and 1MB Video RAM
- ▲ 4MB RAM, Max: 20MB
- ▲ 3.5" 1.44MB Diskette Drive
- ▲ Type III PCMCIA Slot (1 Type III/2 Type II)
- ▲ 85-Key Keyboard
- ▲ Centered 16mm Trackball
- ▲ Integrated Audio (speaker and microphone)
- ▲ System Status Panel
- ▲ 6.7 pounds, including NiMH Battery
- ▲ MS-DOS® 6.2
- ▲ Windows™ for Workgroups 3.11
- ▲ Includes AC Adapter and Slip Case

N75T-340 $4299
Business Lease: $156/month

- ▲ 75MHz Intel DX4
- ▲ 340MB Hard Disk Drive, upgradable
- ▲ 9.5" Active Matrix TFT Color Display with Local Bus Video and 1MB Video RAM
- ▲ 4MB RAM, Max: 20MB
- ▲ 3.5" 1.44MB Diskette Drive
- ▲ Type III PCMCIA Slot (1 Type III/2 Type II)
- ▲ 85-Key Keyboard
- ▲ Centered 16mm Trackball
- ▲ Integrated Audio (speaker and microphone)
- ▲ System Status Panel
- ▲ 6.7 pounds, including NiMH Battery
- ▲ MS-DOS 6.2
- ▲ Windows for Workgroups 3.11
- ▲ Includes AC Adapter and Slip Case

CALL NOW.

©1994 AMBRA Computer Corporation. The AMBRA logo and logotype are trademarks of AMBRA Computer Corporation. AMBRA is a trademark of ICPI Ltd. and used under license therefrom. All other brands and product names are registered trademarks, trademarks or service marks of their respective holders. Offerings may differ in Canada. Prices do not inc...

100MHz. COMES POWER.

N75D-340 $3199
Business Lease: $116/month

- ▲ 75MHz Intel DX4
- ▲ 340MB Hard Disk Drive, upgradable
- ▲ 10.3" Dual Scan DSTN Color Display with Local Bus Video and 1MB Video RAM
- ▲ 4MB RAM, Max: 20MB
- ▲ 3.5" 1.44MB Diskette Drive
- ▲ Type III PCMCIA Slot (1 Type III/2 Type II)
- ▲ 85-Key Keyboard
- ▲ Centered 16mm Trackball
- ▲ Integrated Audio (speaker and microphone)
- ▲ System Status Panel
- ▲ 6.7 pounds, including NiMH Battery
- ▲ MS-DOS 6.2
- ▲ Windows for Workgroups 3.11
- ▲ Includes AC Adapter and Slip Case

N100/75 Options

- ▲ 4MB Memory
- ▲ 8MB Memory
- ▲ 16MB Memory
- ▲ NiMH Battery
- ▲ Battery Charger
- ▲ 12DC Auto Adapter
- ▲ AC Adapter
- ▲ Docking Station
- ▲ Deluxe Attache Carrying Case

Optional Extended 3-Year Warranty Available.[1]

intel inside

1 800-239-5734

AMBRA
AN IBM SUBSIDIARY

shipping. Return shipping and insurance charges are the responsibility of the customer. [1]Please call for details regarding AMBRA's money-back guarantee, limited warranty and extended warranty. Lease based on 36 months, offered by IBM Credit Corp.

MORE, MORE, MORE.

Free First-Year IBM® Onsite Service for Desktop Systems[1]

All AMBRA Desktops and Towers Feature:
- ▲ *Upgrade path to Pentium™ Technology*
- ▲ *3.5" 1.44MB Diskette Drive*
- ▲ *Lexmark™ 101-Key Keyboard*
- ▲ *MS-DOS® 6.2*
- ▲ *Windows™ 3.1, Mouse*

Buy a desktop, get a subnotebook deal! Call for details.

486 SYSTEMS

486SX/33MHz, Desktop
$1369 *Model D433SXA*
Business Lease: $50/month
- ▲ 128KB L2 Cache, Max: 256KB
- ▲ 4MB RAM, Max: 36MB
- ▲ 270MB IDE Hard Disk Drive
- ▲ 14" SVGA Color Monitor-LR
- ▲ VESA® Local Bus Graphics Accelerator 1MB
- ▲ VESA Local Bus IDE Hard Drive Controller
- ▲ 5 ISA Slots & 5 Drive Bays

486DX2/50MHz, Slimline
$1539 *Model S450DXA*
Business Lease: $56/month
- ▲ 128KB L2 Cache, Max: 256KB
- ▲ 4MB RAM, Max: 36MB
- ▲ 270MB IDE Hard Disk Drive
- ▲ 14" SVGA Color Monitor-LR
- ▲ VESA Local Bus Graphics Accelerator 1MB
- ▲ VESA Local Bus IDE Hard Drive Controller
- ▲ 3 ISA Slots & 3 Drive Bays

486DX2/66MHz, Desktop
$1699 *Model D466DXA*
Business Lease: $62/month
- ▲ 128KB L2 Cache, Max: 256KB
- ▲ 8MB RAM, Max: 36MB
- ▲ 270MB IDE Hard Disk Drive
- ▲ 14" SVGA Color Monitor-LR
- ▲ VESA Local Bus Graphics Accelerator 1MB
- ▲ VESA Local Bus IDE Hard Drive Controller
- ▲ 5 ISA Slots & 5 Drive Bays

UPGRADABLE BUS MODELS

486DX2/66MHz, Desktop
$2499 *Model D466I/VL*
Business Lease: $91/month
- ▲ 256KB L2 Cache, Write-Back
- ▲ 8MB RAM, Max: 64MB
- ▲ 440MB IDE Hard Disk Drive
- ▲ 14" SVGA Color Monitor-LR
- ▲ VESA Local Bus Graphics Accelerator 1MB
- ▲ VESA Local Bus IDE Hard Drive Controller
- ▲ 2x Multisession CD-ROM Drive
- ▲ 16-bit Sound Card & 2 Speakers
- ▲ Borland Office'™ on CD
- ▲ Productivity Pack Software
- ▲ 4 16-bit ISA & 1 32 bit VL Bus Slots
- ▲ 5 Drive Bays

***"Buyer's Assurance Award"**—InfoWorld*

100MHz Intel DX4, Desktop
$2799 *Model D4100I/VL*
Business Lease: $102/month
- ▲ 16KB L1, 256KB L2 Cache, Write-Back
- ▲ 16MB RAM, Max: 64MB
- ▲ 720MB IDE Hard Disk Drive
- ▲ 14" SVGA Color Monitor-LR
- ▲ VESA Local Bus Graphics Accelerator 2MB
- ▲ VESA Local Bus IDE Hard Drive Controller
- ▲ 4 16-bit ISA & 1 32-bit VL Bus Slots
- ▲ 5 Drive Bays

PENTIUM/PCI OR EISA

60MHz Intel Pentium, PCI
$2599 *Model DP60PCI*
Business Lease: $94/month
- ▲ 64-bit CPU-Memory-Cache Data Path
- ▲ 256KB L2 & 16KB L1 Cache
- ▲ 8MB RAM, Max: 128MB
- ▲ 720MB IDE Hard Disk Drive
- ▲ 14" SVGA Color Monitor-LR
- ▲ PCI Graphics Accelerator 2MB
- ▲ 2x Multisession CD-ROM Drive
- ▲ 4 ISA, 2 PCI, 1 ISA/PCI Slots
- ▲ Fast PCI IDE Controller
- ▲ 200 Watt Power Supply

60MHz Intel Pentium, EISA
$3199 *Model DP60E/VL*
Business Lease: $116/month
- ▲ 64-bit CPU-Memory-Cache Data Path
- ▲ 256KB L2 & 16KB L1 Cache
- ▲ 8MB RAM, Max: 64MB
- ▲ 6 EISA & 2 EISA/VESA Slots
- ▲ 540MB SCSI Hard Disk Drive
- ▲ 14" SVGA Color Monitor-LR
- ▲ Integrated SCSI-2 Controller
- ▲ 32-bit Graphics Accelerator 2MB
- ▲ 6 Drive Bays

Get A Free Upgrade From A 14" To A 15" FST Monitor With Any 60MHz Processor Or Faster Desktop System.[2]

intel inside

MOBILE SYSTEMS

486SX/25MHz
$1899 *Subnotebook Model SN425C-170*
Business Lease: $69/month
- ▲ 7.8" Color STN Display
- ▲ 170MB Removable Hard Drive
- ▲ 4MB RAM, Max: 20MB
- ▲ 1 Type II PCMCIA Slot
- ▲ 86-Key Keyboard
- ▲ Integrated 16mm Trackball
- ▲ Suspend/Resume
- ▲ MS DOS 6.2, Windows 3.1
- ▲ Slip Case
- ▲ 4 pounds, including battery
- ▲ Monochrome models from $1299

486DX2/50MHz
$3599 *Notebook Model N450T-200*
Business Lease: $130/month
- ▲ 9.5" Active Matrix TFT Color Display
- ▲ 8MB RAM, Max: 12MB
- ▲ 200MB Hard Disk Drive
- ▲ 3.5" 1.44MB Diskette Drive
- ▲ 1 Type III PCMCIA Slot
- ▲ 86-Key Keyboard
- ▲ Integrated 16mm Trackball
- ▲ MS-DOS 6.2, Windows 3.1
- ▲ Carrying Case
- ▲ 6.6 pounds, including battery

486SX/33MHz
$1999 *Notebook Model N433C-120*
Business Lease: $73/month
- ▲ 9.5" Dual-Scan DSTN Color Screen
- ▲ 4MB RAM, Max: 12MB
- ▲ 120 MB Hard Disk Drive
- ▲ 3.5" 1.44MB Diskette Drive
- ▲ 1 PCMCIA Slot Type III
- ▲ 86-Key Keyboard
- ▲ Integrated 16mm Trackball
- ▲ MS DOS 6.2, Windows 3.1
- ▲ Carrying Case
- ▲ 6.6 pounds, including battery

Subnotebook Accessories

Road Warrior: $376
- ▲ PCMCIA 2.4/9.6 kbps Data/Fax Modem, Carrying Case
- ▲ Extra Battery, Battery Charger

Quick Dock: $404
- ▲ Port Replicator, Keyboard
- ▲ 14" SVGA Color Monitor

Notebook Accessories

Instant Office: $927
- ▲ Docking Station, Keyboard
- ▲ 15" FST-NI Color Monitor

Traveler: $278
- ▲ PCMCIA 2.4/9.6 kbps Data/Fax Modem, Extra Battery

CALL NOW.
1 800-239-5734

©1994 AMBRA Computer Corporation. The AMBRA logo and logotype are trademarks of AMBRA Computer Corporation. AMBRA is a trademark of ICPI Ltd. and used under license therefrom. All other brands and product names are registered trademarks, trademarks or service marks of their respective holders. Please call for details regarding AMBRA's money-back guarantee, warranty and credit terms. Onsite service may not be available in certain locations. Offerings may differ in Canada. Prices do not include shipping. Return shipping and insurance charges are the responsibility of the customer. [1]If purchased by 7/31/94. [2]Limited time offer expires 7/31/94. Applies to 60MHz or faster processors. Lease based on 36 months, offered by IBM Credit Corp.

AMBRA™
AN IBM SUBSIDIARY

Untangling the World Wide Web

USABILITY: *Tough to set up dial-in access, but once you're online it's a breeze.*
PERFORMANCE: *Sluggish at 14.4 Kbps; reasonable over high-speed networks.*
TECHNOLOGY: *The next generation in online information access.*
VERDICT: *The best, least expensive way to access the Internet.*

Want a peek at the future of online communication? Then get yourself an Internet connection and a copy of NCSA Mosaic, a remarkable, free, online browsing tool. Developed by the University of Illinois's National Center for Supercomputing Applications this software tames the notoriously unruly Internet. Mosaic lets you tour the World Wide Web, a collection of information resources on the Net, as well as various other Internet resources such as Gopher and finger sites.

You can use Mosaic from an Internet-connected network, or from a dial-up connection to an Internet service provider. If you go the latter route, you'll have to find a provider that offers SLIP (Serial Line Internet Protocol) or PPP (Point-to-Point Protocol) connections, and you'll have to wrestle with complicated setup procedures. It's also available as part of several commercial Internet access products, including Spry's Internet-in-a-Box. You'll find that even at 14.4 kilobits per second (Kbps), Mosaic can be extremely slow.

When you finally get Mosaic up and running, it resembles nothing you've ever seen online. It's like browsing through an interactive multimedia magazine with endless depth and breadth. And the capability to upload and download both graphics and sound places Mosaic at the forefront of front ends.

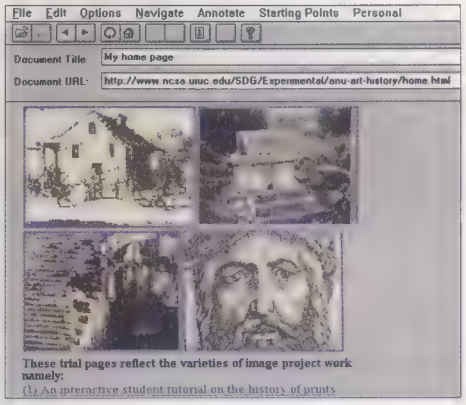
Mosaic Does the Seemingly Impossible: And it's free! Mosaic provides easy net navigation by using hypertext links, and it lets you view graphics and embedded sounds while you're online.

A. Mosaic's **toolbar** gives you instant access to a variety of navigational shortcuts.

B. Documents have plain-English titles, as well as specific **Internet addresses** that you can add to a "history" list. This helps you jump to them immediately.

C. Clicking on a series of **hot links** returns you to specific (in this example) GNN services.

D. Navigating the Internet is a point-and-click breeze for anyone, thanks to **Hypertext links** (noted by underline).



Publish or Perish: Create graphics-rich, online documents for Mosaic, and join the growing list of companies and individuals participating in an online, interactive, global magazine. But don't attempt this with a connection slower than 14.4 Kbps—graphics and sound files can slow your access to a snail's pace.

Limitless Research Mosaic guides you through an unparalleled reference library for limitless research. It will soon offer global electronic commerce through the CommerceNet, a new Internet marketplace debuting in August, which provides online catalogs, competitive bidding, and collaborative engineering and product data exchange.

Mosaic is most useful when perusing the Internet's World Wide Web, a global latticework of information interlinked via hypertext links. Here you'll find just about every piece of information imaginable, from the latest space-shuttle satellite photos to a comprehensive look at Australian marine bird-conservation projects.

To join the growing ranks of businesses that have a presence on the World Wide Web, you need a machine with an Internet connection and HyperText Transfer Protocol (HTTP) software. You also need to format all your information using the HyperText Markup Language (HTML). See the Filebox at right for more information about Mosaic.

If you don't mind a bit of direct dial-in setup trouble, and you have online patience, Mosaic can help you get the most out of the Internet's sights, sounds, and global e-mail capabilities. And, hey, the price is right. PRESTON GRALLA

FILEBOX

NCSA MOSAIC

To Publish on the Web: Unix-based HTTP software is available via FTP from NCSA and many other web sites. HTML Assistant, an HTML editor, is available via FTP from ftp.cs.dal.ca.

Free; a version is available as MOSAIC.ZIP from PC Contact's data library 3 (Utilities/Misc.). See page 228 for details.

CompuServe would like to introduce you to our information highway. Complete with visitor centers, shopping malls, town squares, and other world travelers.

You've probably been hearing a lot about the information highway lately. But before you take your next trip, maybe you should make sure the highway you're on is a superhighway. Like CompuServe.

CompuServe has nearly 2,000 places for you to go, things for you to see, and fun for you to have. You can turn in to one of our many forums where nearly every hardware and software vendor is represented, along with almost every shade of political opinion. Our Electronic Mall® is filled with the newest merchandise, and our CB Simulator and Electronic Convention Center let you just stop by and chat.

Other services range from renowned reference databases to timely financial data and thousands of freeware and shareware programs.

Plus, CompuServe has over a million and a half members worldwide. So, you're bound to find plenty who will share your interests, be able to offer advice, or just become fast friends.

For only $8.95 a month, you can get unlimited connect time — day or night — to a full package of more than 50 basic services. That includes news, stock quotes, travel arrangements, movie and restaurant reviews, 60 E-mail messages a month, and more. Plus, a whole universe of other services is available at nominal additional charges.

So, get on the fast track. For more information or to order, see your computer dealer or call 1 800 848-8199. And take our information highway straight into the next century.

CompuServe®

The information service you won't outgrow.™

Circle 128 on reader service card.

Logbook LONG-TERM TESTS: TravelPro 5300 • Word 6.0 for Windows

AMS Has Horsepower—But Does It Travel?

It's not perfect, but our 66MHz 486 DX2, AMS's TravelPro 5300, never crashed or sassed us in six months of real-world use. On the plus side, there's the machine's gorgeous 9.5-inch active-matrix display and zippy processor. After working with the machine for a few hours, ordinary desktop monitors looked rather harsh and unfocused in comparison.

When I was in the office or at home, the machine was an all-around winner—fast, reliable, and comfortable.

The story changed when I took it on the road, however. The TravelPro 5300 has features few people need in a notebook (like two serial ports in addition to its built-in trackball), and each of them adds weight.

To make matters worse, the battery warning beeper would fire up after just about 40 minutes—not enough time to power you through the brief shuttle flight from San Francisco to Los Angeles. I felt more like I was using a small desktop computer with a built-in uninterruptible power supply (UPS) than a true portable. The machine's internal fan reinforced that.

Would I buy it again? If I needed a fast computer to lug between home and office, then I would. But as a true road warrior's computer, it's just not quite there. RAPHAEL NEEDLEMAN

TravelPro 5300 / AMS / (800) 886-2671 / (818) 814-8851 / $3,750
Circle No. 666 on Reader Service Card

Logbook Entries:

November 22,1993: *AMS's heavyweight color notebook enters our test fleet. I'm skeptical that this relatively unknown vendor can compete with the likes of Toshiba, Compaq, and IBM.*

December 1, 1993: *Turn it down! The internal fan sets up a racket when the CPU gets hot.*

February 3, 1994: *The low-mounted trackball skips if it gets a little dirty. AMS says new versions will have a more gunk-tolerant design.*

April 6, 1994: *Schlepping this nearly seven-pound machine around gives me Quasimodo-like posture. The NiCad battery powers the machine for only about an hour and a half. Newer batteries are supposed to last longer.*

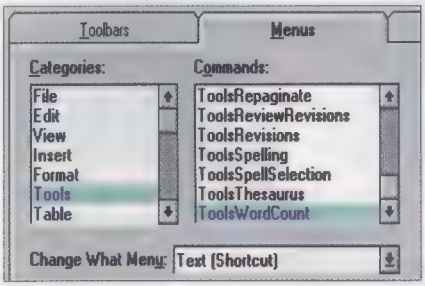
Logbook Entries:

October 10, 1993: *I hope good things come in big packages—Microsoft's Word 6.0 for Windows is a resource hog of a Windows program and walks with a huge footprint.*

November 3, 1993: *It's annoying that documents open at the zoom level in which they were saved.*

November 4, 1993: *A techno-whiz colleague writes me a zoom macro that takes care of the problem.*

February 1, 1994: *After months of doing word counts to make sure my stories fit in their allotted space, I decide that I should make that an option on my standard right-mouse menu (see screen above right).*



Word's Fat Footprints And Quick Fixes

I'm learning to take the bad with the good where Word 6.0 for Windows is concerned. Yes, it's a resource hog, but that's what you get if you want all these cool features. True, I encountered some problems I don't think I should have to live with, but the beauty of Word is that you can get it to do anything—if you're willing to put a little muscle into it.

Take my zoom problem: If a document was saved at higher than 90 percent, I can't see the entire width of my documents on my 14-inch monitor at 640 by 480. So I change my zoom level to 85 or 90 percent.

With my spiffy zoom macro, now I see every single document I open—no matter what its source—at 85 percent. But I wish that Word made it easier to write macros.

Adding the word count command to my right-mouse button was a snap. But when I select a few paragraphs of text to get a word count, the right-mouse word count command counts my entire document. Thank goodness for quick fixes. The interim Version 6.0a release, which also addresses some speed problems, fixed my word count problem, too. Now everything works just as it should.

Despite its warts, over the long haul, Word 6.0 has proven itself. It's got features I'll never again be able to live without—AutoCorrect, customizable right-mouse menus, and unlimited undo, to name just a few. And I can fine-tune my shortcuts to make the drudgework of editing fly by. KYLA K. CARLSON

Word 6.0 for Windows / Microsoft Corp. / (800) 426-9400 / (206) 882-8080 / $495
Circle No. 667 on Reader Service Card

PHOTOGRAPH BY GIAMPIERO BENEVENUTI

Who Has The Easiest Disk Drive Upgrades?

Introducing the Disk•Stor™ family of hard drives from Conner. Upgrade solutions that are as easy to install as they are to use.

If you have outgrown your disk capacity on your PC, Conner has a range of disk drives designed to handle all of today's storage intensive applications. Simply choose from our high performance 3.5-inch, 1-inch high disk drives in capacities from 210 MB to 1 GB and you'll be up and running in no time.

Disk•Stor drives come with all the hardware, software and documentation you need to make installation quick and easy. Plus, each disk drive is backed by a two-year warranty and toll-free technical support. Which is the reason why leading computer manufacturers prefer Conner disk drives for their systems.

So call Conner at 1-800-230-5638 or visit your nearest retailer. And while you're at it, ask about the easiest tape backup solutions.

Disk•Stor 420 MB 3.5-inch Internal Hard Disk Drive Kit

Capacity Chart

Disk•Stor Model	Capacity
DS210A	213 MB
DS420A	426 MB
DS540A	541 MB
DS810A	810 MB
DS1080A	1080 MB

Retail Outlets: Best-Buy, CompUSA, Computer City, MicroCenter, Walmart **Catalog Merchandisers:** CrutchField, Global, Inmac, Micro Warehouse

Conner Peripherals World Headquarters, 3081 Zanker Road, San Jose, CA 95134, Tel: 408 456 4500 ©1994 Conner Peripherals, Inc. All trademarks or registered trademarks are of their respective owners.

The Same People With The Easiest Tape Backup.

Introducing the Tape•Stor™ family of tape drives from Conner. Tape backup systems that are as easy on your wallet as they are to use. Whether you need cost-effective data protection for a stand-alone PC or an entire corporate network with hundreds of users, Tape•Stor provides reliable tape backup in capacities from 250 MB to 48 GB.* What's more, Conner delivers these systems in your choice of DAT, minicartridge, and data cartridge formats.

And when it comes to ease of use, Conner's Backup Basics™ or Backup Exec™ Software is included for simple storage management in DOS,® Windows™ and popular network environments. Tape•Stor also comes with all the installation hardware and documentation you need. And as always, Tape•Stor drives are backed by a two-year warranty** and toll-free technical support.

So call Conner at 1-800-230-5638 or visit your nearest retailer. And while you're at it, ask about the easiest disk drive upgrade solutions too.

Tape•Stor 250 MB Internal Tape Backup System

Capacity Chart

Tape•Stor Model	Compressed Capacity
Minicartridge	
C250MQ	250 MB
4mm DAT	
C4320R	2.0 GB
TSD4000H-SSE	4.0 GB
DAT Autoloader	
C4584NP	16 GB/48 GB*
TSL16000-Net	16 GB/48 GB*
Data Cartridge	**Native Capacity**
C2150S	250 MB
C2525S	525 MB

CONNER®
The Storage Answer.

* 48 GB when used with an optional 12 cassette magazine. ** Tape•Stor data cartridge tape drives are backed by a one-year warranty.

Circle 173 on reader service card.

Life Begins At 100MHz

SYNOPSIS

TECHNICAL FORECAST: *Intel's P6 and other chips to consider.* **120**

HARD NUMBERS: *90MHz Pentiums excel.* **122**

SHATTERING BOTTLENECKS: *Slow components foil fast CPUs.* **124**

100MHz DX4s: *Four clock-triplers.* **126**

BLUE LIGHTNING: *The first 75MHz 486.* **128**

POWERPC: *Apple's classy 80MHz Power Mac 8100/80 AV.* **132**

90MHz PENTIUM: *Dell's 90MHz Pentium dusts DX4s.* **134**

FINAL ANALYSIS: PC Computing's *Decision Maker.* **136**

Ah, the seduction of power. It starts at 75MHz and thrives at 100MHz and beyond. It performs complex database searches faster than you can spin a dime across a coffee table, and it renders high-resolution 24-bit images faster than you can doodle on a cocktail napkin. It delivers a magnitude of PC performance you have never known. And once you've had this much power in your grasp, you'll never want to settle for less.

The 66MHz speed limit that has lorded over the PC for nearly two years has finally been smashed—not by one CPU, but by more than a half-dozen. It points to a fundamental change in the industry, in the ways that PCs will be designed, bought, and used.

Intel's Pentium, the various clock triplers from IBM and Intel, and the PowerPC from Apple, IBM, and Motorola each bring a different range of capabilities to today's business applications. All remain compatible—albeit tenuously, in some cases—with the *x*86 architecture. Otherwise, their only common hallmark is uncompromised, barn-burning performance.

What Pentium Brings to the Party There's no better view of the transformation than from the top. Dell Computer's Dimension XPS P90, powered by Intel's new 90MHz Pentium, decisively soared past every other system we tested in *x*86 applications. But the Pentium really shines when juggling multiple applications. Run a video clip in a window or download files in the background and it won't bring your other programs to their knees—there's enough Pentium CPU muscle to go around.

The Dimension XPS P90 runs neck-and-neck with Apple's 80MHz Power Macintosh 8100/80 AV in both integer and floating-point calculations. Much of the Pentium's capabilities—dual instruction pipelines and floating-point math, in particular—will be realized when native applications arrive.

No matter: Nothing beats the Dimension XPS P90 for running

BY MARTY JEROME

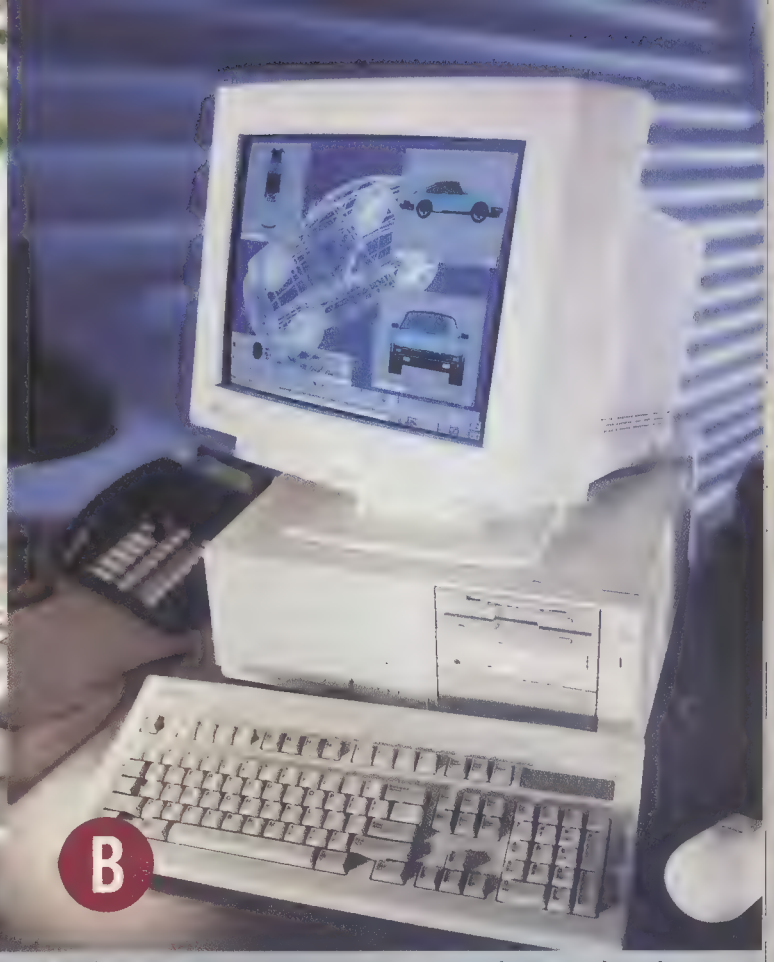
A VIRTUOSO: The 80MHz PowerPC 601 chip is a graphics wizard in Power Macs, although it runs Windows only in standard mode.

B RAW SPEED: Intel's 90MHz Pentium is the fastest way to run *x*86-based business applications of all kinds.

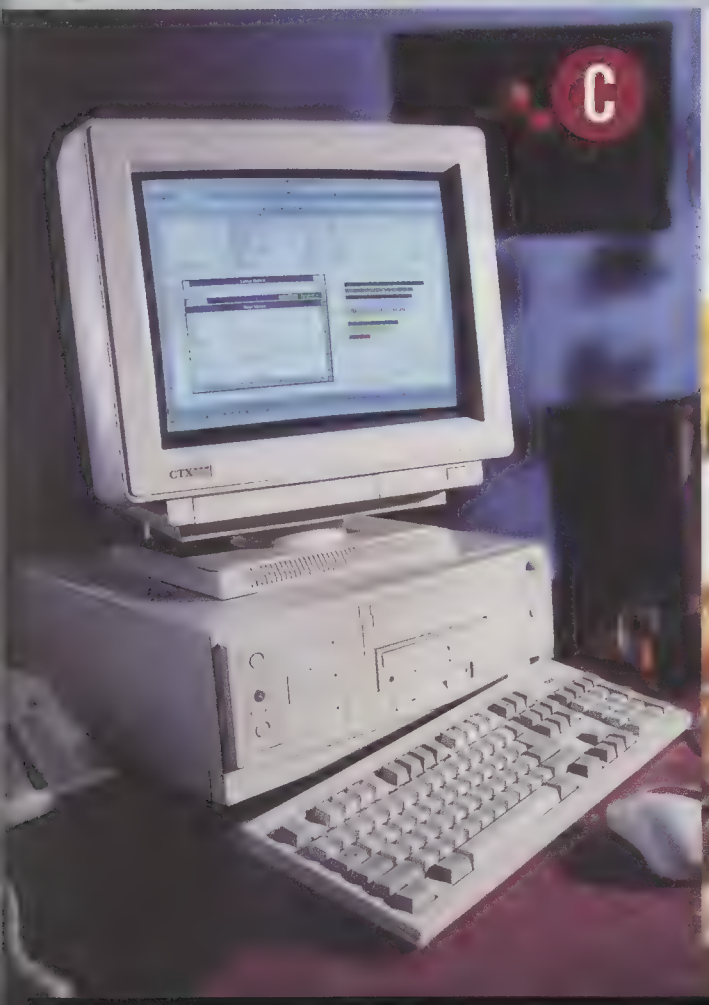
C NEW RULES: Clock-tripled 100MHz 486DX4 systems will quickly replace 66MHz 486DX2s as the desktop standard.

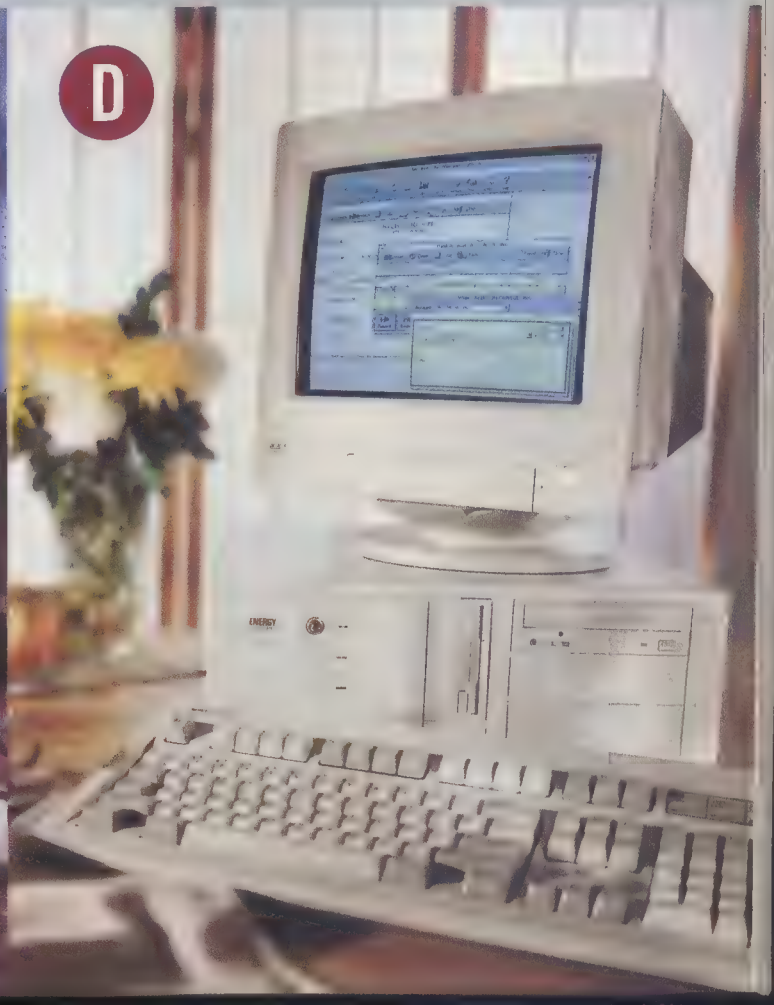
D LOW HIGH-END: 75MHz Blue Lightning 486 chips are cheaper than DX4s—but their performance lags.

PHOTOGRAPHS BY ROBIN GINSBERG



Beyond 66MHz: 80MHz, 90MHz, and 100MHz systems set new speed standards.





Future Watch: Tomorrow's Chips

the programs installed on your hard drive. It provides the perfect upgrade path for users who are squarely grounded in Windows and *x*86 applications and also need to run CAD or engineering programs, workgroup applications, and large-scale financial analysis systems.

Mac PowerPC Challenging the 90MHz Pentium is the PowerPC, which debuted with fanfare in March (see "The PowerPC Revolution," February, page 129). The attention was well deserved: The PowerPC-based Macintosh is a true RISC PC capable of running both Macintosh and Windows applications. Our tests of the first 80MHz Power Macintosh 8100/80 AV confirmed our early enthusiasm. Performance in native graphics applications such as Aldus's PageMaker and FreeHand and Adobe's Photoshop wailed.

Windows, however, runs only in emulation through Insignia Solutions' SoftWindows, and only in standard mode. The Power Mac lagged well behind Dell's 90MHz Pentium and all of the clock-tripled systems we tested in Windows applications. Insignia plans to introduce a 486 version of its emulation package this fall.

486 Times Three Many users will prefer the safe haven of the 486 architecture, knowing that the current crop of clock triplers allows them to put the pedal to the floor. The clock-tripled Intel DX4 was a natural follow-up to the 486DX2. Fully pin-compatible with the 486 CPU, it allows manufacturers to squeeze as much as 60 percent more performance from existing motherboards. Currently available in 75MHz, 83MHz (the clock runs at 2.5 times its external speed), and 100MHz versions, the DX4 will appear in everything from notebooks to servers, thanks to its 3.3-volt, low-heat design. In fact, we expect it to put the DX2 out to pasture. Why? More bang for the buck. Zeos International's Pantera DX4-100 particularly impressed us. It was the second fastest of the DX4s we tested, yet costs only $3,195 fully loaded. All of the DX4s push today's applications and multimedia to the max.

Only Alaris's Cougar EnergySmartPC BL3X/75 lagged behind in our tests. Powered by a 75MHz Blue Lightning CPU from IBM, its performance trailed a 66MHz 486DX2 Compaq system. Like Intel's DX4, the Blue Lightning comes with a 16K cache, but doesn't have a floating-point unit, which the DX4 does. Also, it uses a 386 bus interface. The Blue Lightning-2, which is reportedly scheduled to debut this fall, will come with a 486 interface that should boost performance by up to 20 percent. It, too, will seduce you with power.

Technical Forecast: Desktop Crays

1. Feeling the heat from the PowerPC, **Intel's P6** will debut in 1995—a year ahead of schedule.
2. Motorola has other plans. Its **PowerPC 604** will offer twice the performance of the 601.
3. NexGen's **Pentium clone,** the Nx586, means lower prices on Pentium-class PCs for everyone.

First, the bad news: A flurry of new CPUs will make PC purchases even more confusing in the months ahead. The good news? The price of power will continue to plummet.

Intel P6 In late 1995, Intel plans to upstage its 90MHz and 100MHz Pentium CPUs with a chip code-named the P6. Six million transistors will crowd its wafer, capable of 250 million instructions per second—which gives you the power of your everyday ES/9000 mainframe computer and runs about 60 percent faster than current Pentiums. Look for the P6 to run at clock speeds of 150MHz or higher.

Motorola PowerPC 604 Meanwhile, Motorola's PowerPC 604, which is due at the end of this year, will succeed the 601, the brains behind today's Power Macs. It will deliver roughly twice the performance of current Pentiums and will arrive nearly a year before the P6. The PowerPC 620, due late in 1995, will double the performance yet again.

Newcomers Competitors are also on to the Pentium. Advanced Micro Devices' code-named K5 and Cyrix's code-named M1 chips will offer advanced superscalar 64-bit designs that run unrecompiled 486 code faster than today's 90MHz Pentiums. The 100MHz M1—due this year—is a 64-bit CPU with unique pipeline management and 32 internal registers that should deliver Pentium power to *x*86 applications. Because it uses a slow bus interface, however, its performance will lag behind today's 90MHz and 100MHz Pentiums. Both AMD and Cyrix also have 80MHz 486-class chips in the works, chips which should drive prices on Intel's 486s to unprecedented lows. Finally, NexGen's Nx586, a Pentium clone, is a two-chip CPU that runs at 60MHz and 66MHz. Priced well below Intel's chips, it's already exerting tremendous downward pressure on prices of Pentium-class systems. This, of course, is the best news of all.

CPUs THE NEXT GENERATION

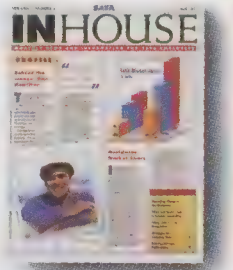
CHIP	Date Expected in Systems
AMD Am486DX-80	Third Quarter 1994
AMD K5	Third Quarter 1995
Cyrix CX486DX2/80	Third Quarter 1994
Cyrix M1	Fourth Quarter 1994
Intel P6	Late 1995
Motorola PowerPC 604	Fourth Quarter 1994
Motorola PowerPC 620	Fourth Quarter 1995
NexGen Nx586	Third Quarter 1994

Science has found a cure for snoring. At least during your presentation.

PCC Best
PC Computing
BEST 200
June 1994
Tektronix Phaser 220i

It's the new Phaser™ 220 color printer by Tektronix®. It's affordable. It's easy to use. And it's the best way to keep people awake without the use of costly stimulants. How? Quite simply, amazing color. The Phaser 220's SuperCell 600™ technology allows you to print a whopping 600 x 300 dots-per-inch. And in lay terms, that's a lotta dots. And a lotta dots means your annual reports will yodel, your pie charts will do backflips and your bar graphs will announce their presence with authority. Plus you get all this great color at two pages per minute on most common laser papers. At this speed, it should come with an airbag. The Phaser 220 also offers true Adobe® PostScript™ Level 2 and supports PCs, Macs, workstations and just about every network interconnect. Add to this the fact that it's reliable, has multiple paper trays and a huge print capacity and you've got yourself one tough workhorse. For a free Phaser 220 print sample or the name of your nearest Tektronix dealer, call **800-835-6100**, department 34D. For faxed information, call 503-682-7450, and ask for document #5003. But don't wait too long. Because business is getting more and more competitive. And if you snooze, you lose.

Overheads



Desktop Publishing

Reports

The Phaser 200 series starts at a suggested retail price of only $2,995. Who says money can't buy happiness?

Tektronix

Phaser is a trademark of Tektronix, Inc. PostScript is a trademark of Adobe Systems, Inc. All other marks are trademarks or registered trademarks of their respective companies.

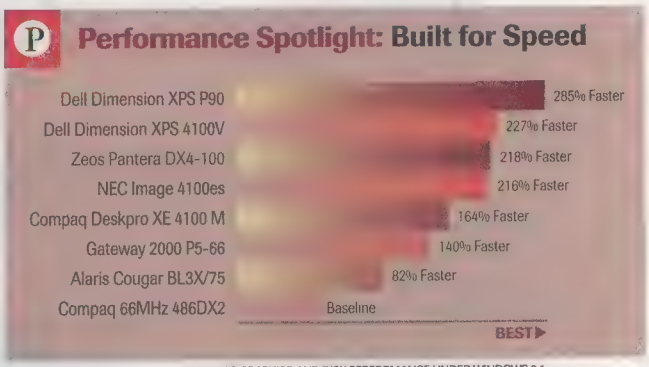
Circle 121 on reader service card.

The **Hard** Numbers

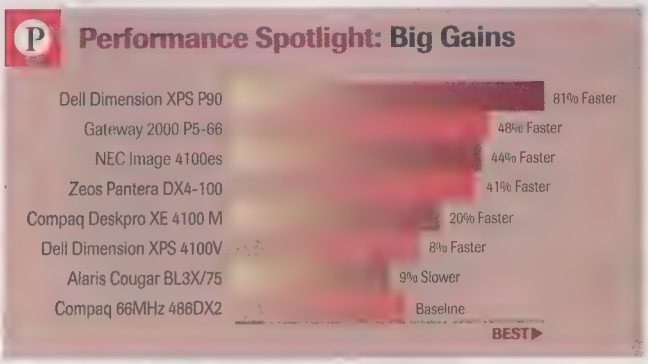
Hit PageMaker's search-and-replace command on a 90MHz Pentium and watch in **numb disbelief** as it executes. And when it recalculates an Excel spreadsheet, you half expect to smell a **burning clutch**. As *PC Computing* Labs tests confirm, there's no beating the Pentium for Windows applications, although the Power Macintosh 8100/80 AV runs on par with it when executing native Mac programs. Even the **dollar-saving** DX4s provide a level of performance that a 66MHz 486DX2 can't touch. IBM's 75MHz Blue Lightning was less impressive than the DX4, due in large part to the chip's lack of an onboard floating-point unit.

Who needs all this horsepower? If you plan to stick with Windows 3.1 and the 16-bit applications already on your hard drive for the next two years, DX4 systems offer first-rate power at bargain-basement prices. Although their overall performance is slower than Pentiums, you won't notice the difference with most mainstream applications, such as spreadsheets and word processing programs. Zeos's Pantera DX4-100 proved particularly impressive; it turned in high benchmark scores yet wore the lowest price tag of the bunch: $3,195. The other three DX4s—Compaq's Deskpro XE 4100 M 525/w, Dell's Dimension XPS 4100V, and NEC's Image 4100es—are no slouches, either.

Winstone Wonders As the broadest measure of performance in Windows applications, the Winstone benchmark (see "Performance Spotlight: Big Gains," below) confirmed our hunch that DX4-based systems would perform somewhere between a 66MHz 486DX2 (Compaq's ProLinea MT CDS) and a 66MHz Pentium (Gateway 2000's P5-66). Honors go to NEC's Image 4100es and Zeos's Pantera DX4-100 as the fastest DX4s.



NOTE: WINBENCH IS DESIGNED TO MEASURE GRAPHICS AND DISK PERFORMANCE UNDER WINDOWS 3.1.



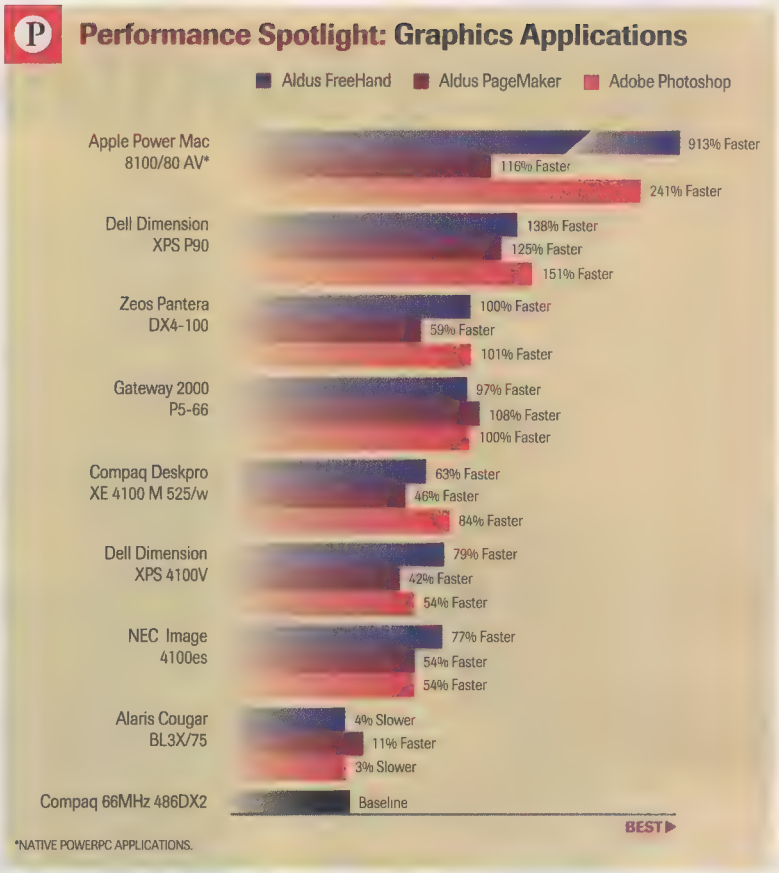
NOTE: THE WINSTONE BENCHMARK RUNS 12 POPULAR WINDOWS BUSINESS APPLICATIONS

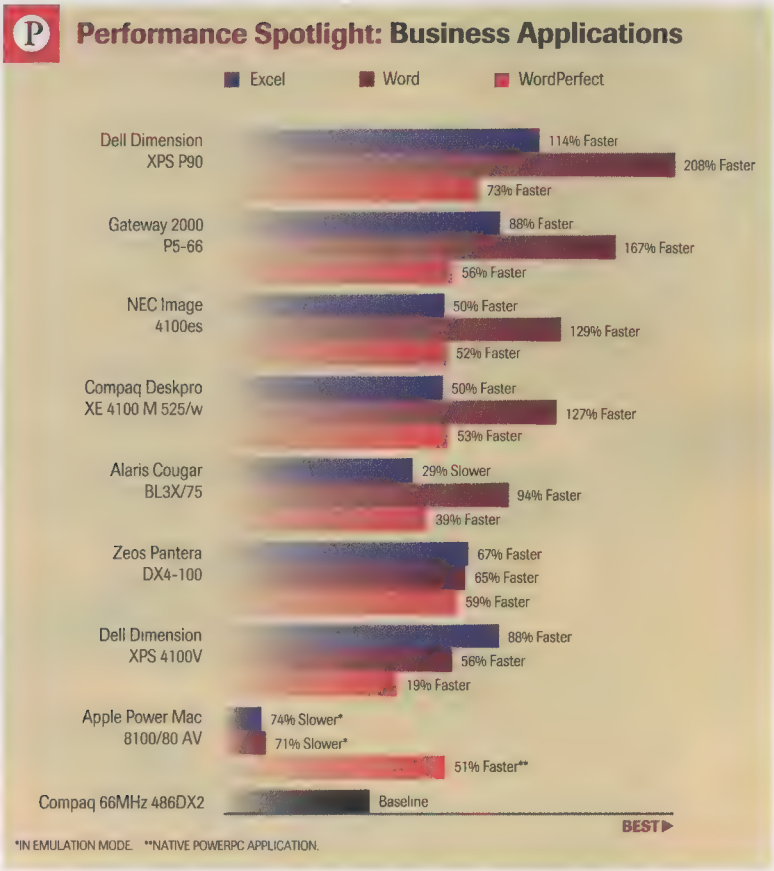
The Pentium should also be a boon for voice and handwriting recognition, 3-D modeling, and high-throughput servers, thanks to its superbly implemented dual-processor mode. Likewise, we expect Pentiums to run 32-bit code—including that in the next version of Windows—much more efficiently than 486s will.

Raw Numbers A rudimentary measure of system performance at Windows-intensive tasks, Winbench turned up a surprise: Dell's Dimension XPS 4100V, an otherwise middling DX4, turned in the second fastest time thanks to its Diamond Viper video card (see "Performance Spotlight: Built for Speed," above). Even so, it's no match for its Pentium-class big brother, the Dimension XPS P90.

What of Apple's PowerPC-based Power Macintosh systems? Current Macintosh users have every reason to upgrade, especially power users who have ventured into the realm of workstation-class applications. Most Windows PC users, however, will do better to adopt a wait-and-see attitude toward the PowerPC—at least until more software developers announce plans to recompile their applications for the new chip.

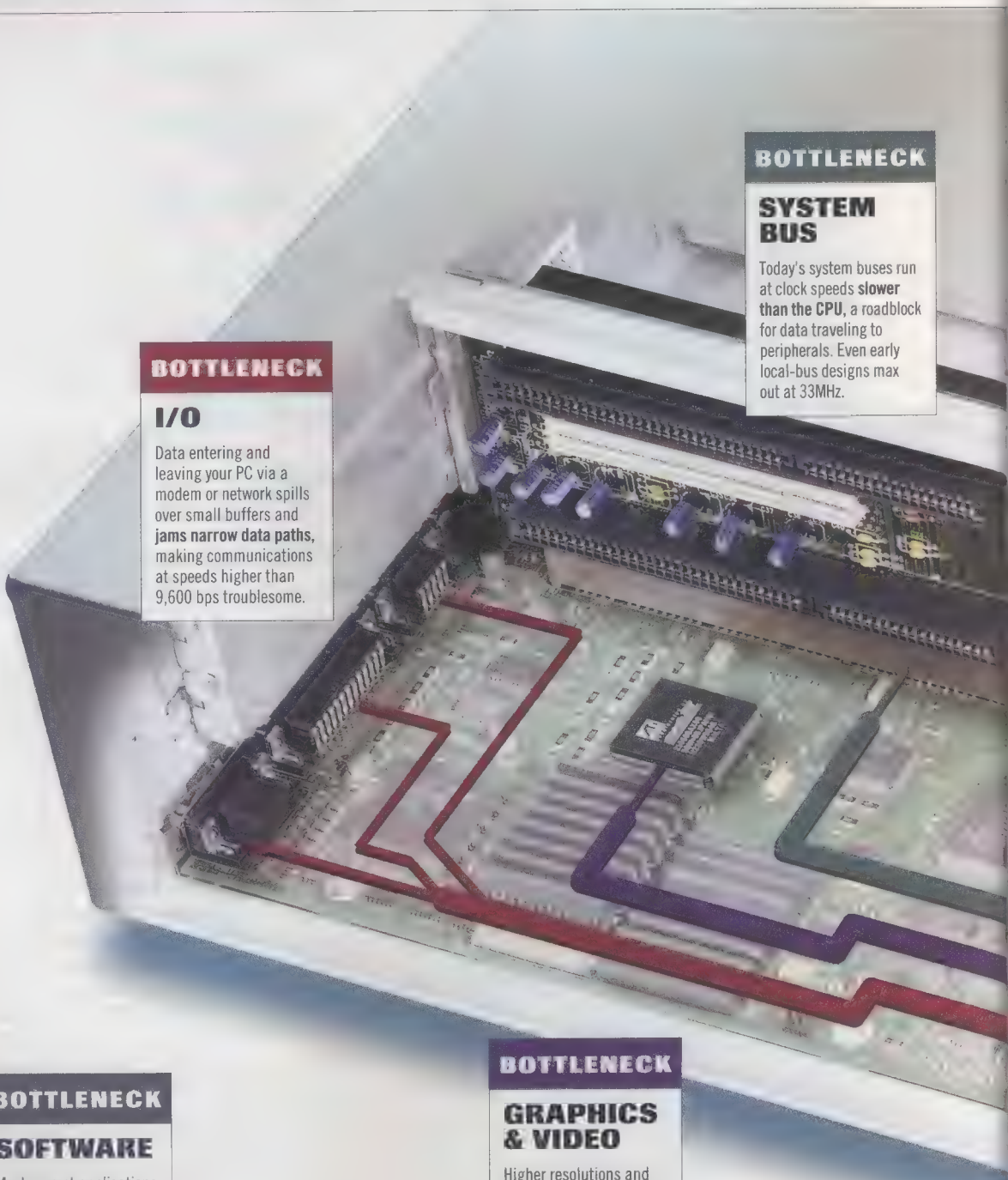
The RISC Advantage: Line up Dell's Pentium Dimension XPS P90 against the Power Macintosh 8100/80 AV, have each run native graphics applications, and the PowerPC RISC chip's advantage becomes clear. Despite a relatively slow video subsystem (although it's a vast improvement over the video on the current 68040-based Macintosh Quadra), the Power Mac hauls. It's an excellent graphics workstation for current Mac users. But until more *x*86 applications are recompiled for it, the Dimension XPS P90 is the fastest machine you can buy for intensive graphics chores—as much as 151 percent faster than a 66MHz Pentium. Even the DX4s—especially Zeos's Pantera DX4-100—offer a substantial performance edge over current 66MHz 486DX2 systems.





The Pentium Advantage: The performance penalty you'll pay for the Power Macintosh's emulation mode gives good reason to pause before springing for one. IBM has plans to introduce an on-chip emulator with the PowerPC it introduces in 1995, which should boost emulation performance considerably. Meanwhile, you'll want to run business applications in native mode—regardless of the system you buy. The Pentium's muscle gives a noticeable but hardly dramatic performance edge over DX4s in word processing and spreadsheet tasks. The money saved by buying a clock tripler may be well worth the slight performance trade-off.

Shattering **Bottlenecks**



BOTTLENECK

SYSTEM BUS

Today's system buses run at clock speeds **slower than the CPU,** a roadblock for data traveling to peripherals. Even early local-bus designs max out at 33MHz.

BOTTLENECK

I/O

Data entering and leaving your PC via a modem or network spills over small buffers and **jams narrow data paths,** making communications at speeds higher than 9,600 bps troublesome.

BOTTLENECK

SOFTWARE

Most current applications use **16-bit code**—which hardly avails today's 64-bit feature of Pentium and RISC processors. Inefficient code also overloads the system.

BOTTLENECK

GRAPHICS & VIDEO

Higher resolutions and **24-bit color** mean more data to push around on your monitor. Full-motion video also steals CPU time.

Bottleneck	Solution
CPU	Look for continued—and increased—use of **coprocessors** to offload floating-point math, video, serial communications, and other chores from the CPU. Large (512K or more) level-2 caches are also appearing.
GRAPHICS & VIDEO	The 64-bit graphics accelerators that offload graphics tasks from the CPU have already arrived; expect their prices to drop. **Dual-ported VRAM** is also standard equipment. New on the scene: integrated video coprocessors.
I/O	Local-bus network cards abound, although **Fast Ethernet**—with ten times the throughput of traditional Ethernet—owns the future. Coprocessed I/O ports are a near-term solution.
MEMORY	Asynchronous dynamic RAM chips can't keep up with high clock speeds and the Pentium's 64-bit design. Among the possibilities for the future: **cached DRAM** and enhanced DRAM chips that broaden the memory-to-CPU bandwidth.
SOFTWARE	Software publishers aren't rushing to recompile applications for the Pentium and the PowerPC. Today's CPUs depend on **true 32-bit code** for full performance. Look for more 32-bit applications—including the next version of Windows—to arrive in 1995.
STORAGE	Hard drives continue to get more efficient. And now that the 528MB limit on IDE hard drives is history—thanks to **enhanced IDE**—fussy SCSI drives aren't the only high-performance option.
SYSTEM BUS	New versions of PCI and VL-Bus bump **local-bus** speeds to 50MHz and beyond (up from a maximum of 33MHz) across a 64-bit data path (up from 32 bits). High-speed 64-bit peripherals will follow.

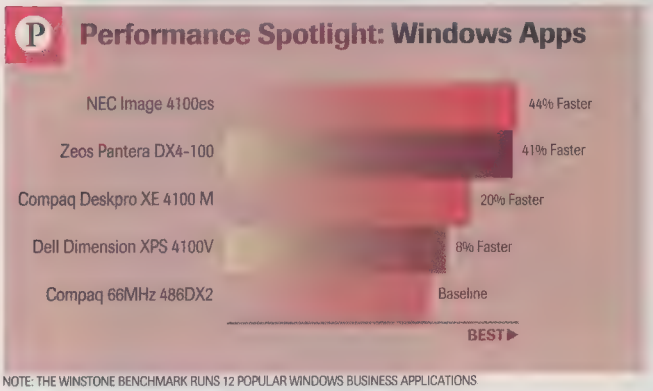
100MHz DX4s: Compaq, Dell, NEC, Zeos

Clock-Tripled 486s

Take a tip on Intel's new DX4 CPU: Ignore the technical hype; look at the prices. Spanking-new systems start at less than $3,000 and deliver all of the performance that most of today's 16-bit business applications require. Loaded to the gills, Zeos's Pantera DX4-100 costs only slightly more than that. We remind you that these are first-generation DX4 PCs. Think about where those prices will hover three months from now given today's escalating chip wars. True, 90MHz Pentium systems like Dell's Dimension XPS P90 offer better performance when they're running multiple applications or being used for sophisticated processing (CAD, desktop publishing, graphic design, financial modeling, etc.), but DX4 systems offer the right balance of price and performance for mainstream spreadsheet, word processing, and network applications that are today's mainstay business programs.

For the money, you get PC performance that will make the 66MHz 486DX2 on your desk feel like a vintage IBM AT. In many ways, the 100MHz DX4 is the flagship of the 486 family of CPUs. Its 0.6-micron, 3.3-volt fabrication keeps heat down and energy conservation up. It features Intel's canny SL technology, which allows any system that uses the CPU to be Energy Star–compliant (90MHz Pentiums won't meet these standards until the end of the year). Already, a generation of 75MHz DX4 notebooks are thundering to market. The DX4 chip's built-in floating-point math chip and 16K cache—up from the original 486DX's 8K cache—maximize performance.

Our tests certainly concur. NEC's Image 4100es performed nearly as fast as Gateway 2000's P5-66 66MHz Pentium system in Windows applications. Zeos's Pantera DX4-100 lagged only slightly behind. Even the relatively slow Dimension XPS 4100V from Dell and Deskpro XE 4100 M 525/w from Compaq performed as much as 127 and 88 percent faster respectively than a 66MHz 486DX2 in individual application tests (see "Performance Spotlight: Business Applications," page 123). The bottom line? A DX4 outfitted with VL-Bus or PCI local bus, a fast video accelerator, 16MB of RAM, and a 256K level-2 cache performs only slightly slower than a 66MHz Pentium. Not bad for a system that costs scarcely more than a similarly configured 66MHz 486DX2.



NOTE: THE WINSTONE BENCHMARK RUNS 12 POPULAR WINDOWS BUSINESS APPLICATIONS

Catching Pentiums: Running a mix of graphics- and text-based apps, performance differences were obvious. The NEC and Zeos systems sailed past a 66MHz 486DX2 system.

Compaq Deskpro XE 4100 M 525/w This DX4 system, which joins Compaq's XE family of slim-line Deskpro systems, performed 20 percent faster than Compaq's 66MHz 486DX2-based ProLinea MT CDS. Like its slower sibling, the 4100 M uses Compaq's proprietary QVision video accelerator, which lagged slightly behind other video subsystems in our tests. Also, none of the three side-mounted expansion slots provides local-bus access.

Still, the Deskpro XE 4100 M 525/w performed faster than Dell's Dimension XPS 4100 across the board. The trademark Enhanced Business Audio in the Deskpro series has been upgraded, and the machine comes standard with 16MB of RAM (expandable to 32MB) and a 256K cache. To our disappointment, the dual-speed CD-ROM drive costs extra. And although we like the trim-line case, which sits unobtrusively on a desktop, even simple upgrades like adding RAM often require removing entire components to gain access. Even so, this is a trifle—stock it with all the RAM and drive space your budget will allow, and its quiet fan and compact size will more than compensate for its upgradability.

Dell Dimension XPS 4100V Pity the Dimension XPS 4100V. The long shadows cast by the 90MHz Pentium-based Dimension XPS P90 have made it little more than a curio in Dell's line of systems. The configuration we tested costs more than the XPS P90, yet doesn't deliver anywhere near the performance. Our unit came with a SCSI drive. Systems with IDE drives cost about $500 less. Even so, we found little reason to cheer.

Despite a Diamond Viper video accelerator (with 2MB of dynamic RAM) running on VL-Bus, video performance was mediocre. The pricey SCSI drive on our test model didn't help system throughput a bit. And it's the only DX4 in which the CPU isn't upgradable.

On the plus side, the system comes with a dual-speed CD-ROM drive, a Sound Blaster 16 audio card from Creative Labs, and plenty of room for expansion (seven ISA slots, two of which can share VL-Bus peripherals). Its 17-inch monitor was also one of the finest of the bunch: bright and clear—perfect for running graphical interfaces at 1,024-by-768-pixel

FILEBOX

100MHz DX4s

Pros: Faster than 486DX2s and priced to sell. The new standard.

Cons: Pentiums are still faster—and dropping in price, too.

Suitability: The new desktop workhorses.

Extras: High-speed video, PCI or VL-Bus.

Deskpro XE 4100 M 525/w
$4,870
Compaq Computer Corp.
(800) 345-1518
(713) 378-8820
Reader Service No. 681

Dimension XPS 4100V
$4,728
Dell Computer Corp.
(800) 289-3355
(512) 338-4400
Reader Service No. 682

Image 4100es
$4,680
NEC Technologies
(800) 632-4636
(508) 264-8000
Reader Service No. 683

Pantera DX4-100
$3,195
Zeos Int'l
(800) 554-5218
(612) 362-1234
Reader Service No. 684

resolution. But dollar for dollar, you're far better off buying Dell's splendid Dimension XPS P90—at least until prices of DX4s spiral downward.

NEC Image 4100es The latest in NEC Technologies' Image series nips at the heels of Pentium-class PCs in performance and outclasses almost any PC in multimedia features. The 4100es turned in better benchmark scores than any of the DX4s we tested, thanks to NEC's own video accelerator running on VESA local bus, 16MB of RAM, a 256K CPU cache, and a 540MB Enhanced IDE hard drive also running on local bus. Its performance in business application benchmarks was particularly impressive.

NEC clearly believes you'll want to harness this DX4 horsepower for your business presentations. The Image 4100es comes with a triple-speed CD-ROM drive connected to an internal and external Fast SCSI-2 controller. CD-ROM performance—especially when running full-motion video—was particularly impressive. In addition, the multimedia version of the system comes with Lotus's ScreenCam video capture-and-playback utility, as well as Labtec's CS-100 speakers.

Either way, it's an impressive bundle, although we have our nits to pick. The heat sink on the CPU entirely blocks one of the three expansion slots (two VL-Bus, one ISA). And we found the system somewhat pricey, despite its rich array of features. Still, it's tops for 486 performance and a superb multimedia PC. If your multimedia presentations are worth a $1,500 premium, take the Image 4100es over the Pantera DX4-100.

Zeos Pantera DX4-100 It's fitting that Zeos named its DX4 after a 150-mph sports car. The Pantera tore through our benchmark tests. This owed in large part to a PCI-based Diamond Viper video accelerator—the Pantera was the only PCI DX4 we tested. Because the DX4 CPU is pin-compatible with the 486 chip, most system makers simply retrofit existing motherboards with the clock-tripled CPU. This is why most of the DX4s coming to market use VL-Bus, not PCI.

Local bus aside, the Pantera would have taken top honors in performance were it not for the slight edge NEC's Image 4100es pulled in word processing and spreadsheet chores. At $1,485 less than the Image 4100es, however, we'd happily settle for second place, especially considering what you get for the money. With 16MB of RAM, a 256K cache, a 528MB IDE hard drive running on local bus, a dual-spin CD-ROM drive, and a 17-inch monitor, the Pantera costs $3,195. Our recommendation? Pony up for a sound card and a 1-gigabyte drive, then make off like a thief.

75MHz Blue Lightning: Alaris Cougar EnergySmartPC BL3X/75

Price Killer

FILEBOX

COUGAR BL3X/75

Pros: Look for it to drive prices of other 486s through the floor.

Cons: It can't keep up with 100MHz DX4s—and barely bested a 486DX2.

Suitability: Penny-wise power in a desktop, but wait for 100MHz versions.

Extras: Toshiba dual-spin CD-ROM drive, 15-inch monitor.

$3,716
Alaris
(510) 770-5700
Reader Service No. 685

Feel the heat, DX4? Barely out of the gate, you already face competition from IBM's clock-tripled Blue Lightning CPU, which can't beat you in performance, but swaggers with a distinct price advantage, as we found with Alaris's Cougar EnergySmartPC BL3X/75.

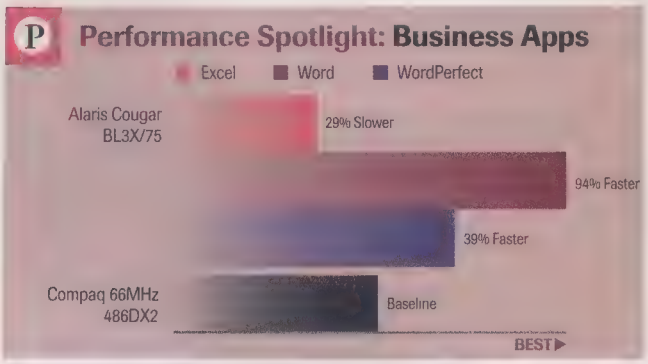
Slow Peripherals Second only to Zeos's Pantera DX4-100 in low cost, the $3,716 Cougar comes with a 75MHz clock-tripled Blue Lightning from IBM (100MHz versions will soon be available). Performance was mixed. In graphics-intensive applications, the system barely nosed ahead of Compaq's 66MHz 486DX2-based ProLinea MT CDS—in some it cases ran slower. Its numbers were brighter in business applications tests—an average of 54 percent faster.

A faster video accelerator would help. The Cougar uses its own, running on VL-Bus with only 1MB of memory. The hard drive also runs on local bus. Outfitted with 16MB of RAM (expandable to 54MB), a 256K cache, and a Cyrix math coprocessor, the Cougar truly shines in processor-intensive chores.

Like the DX4, the Blue Lightning contains a full 16K of internal cache, but also benefits from a level-2 cache—probably more so, given that the chip uses a 386-bus interface. This fall IBM reportedly plans to introduce the Blue Lightning-2, which will have a 486-bus interface and should perform 10 to 20 percent faster than the current 100MHz version. But because the chip will still lack an integrated floating-point unit, look for the DX4 to maintain its performance edge.

Driving Prices Down Price is another matter. Expect at least a 20 percent cost saving in Blue Lightning systems over equivalently equipped DX4s—that is, until competition between these chips and offerings from Cyrix turns into an out-and-out price brawl (excuse us if we start to drool).

The Cougar comes fully dressed with seven expansion slots, two of which can be used for VESA local-bus peripherals. The dual-speed CD-ROM drive controller has an external port, which we'd like to see on more systems. The Cougar is a fine system on the whole, but we'd highly recommend you go with the 100MHz version to get all the performance help you can.



A Mixed Bag: There's no math coprocessor on IBM's Blue Lightning chip, although Alaris included one on the Cougar's motherboard. Even so, its performance lagged in Excel.

The perfect mate.
Works hard.
Has lots of energy.
Never snores.

The TI TravelMate™ family of notebooks offers the perfect workmate to increase your productivity. Because different kinds of people have very different demands, we have created two series – the 4000E and the 4000M – to meet your individual needs.

Every member of the TravelMate family features a powerful 486 processor – up to 75MHz. Combined with monochrome or brilliant color displays, superb battery life, and a variety of configurations, you can be more productive even when you're on the go. The TI TravelMate notebooks – there's a perfect mate for you.

The perfect desktop replacement. The TravelMate E Series.

Looking for the expansion capabilities of a desktop coupled with the portability and convenience of a notebook? Turn to the TravelMate 4000E Series. Partner the TravelMate 4000E with TI's Intelligent Docking System and you have the ultimate desktop PC replacement. Just insert any of the eight models of TravelMate 4000E notebooks into the Intelligent Docking System, push a button and the auto-load mechanism does the rest. Your TravelMate 4000E is now automatically configured as a desktop PC. It knows whether you have an external monitor, keyboard, internal modem and

The TravelMate Notebooks Now there's a perfect

TravelMate E Series

- Eight 486 models ranging from a 25MHz up to a racy IntelDX4™/75MHz
- 4mm full-travel keyboard with a desktop feel, Microsoft BallPoint™ mouse with QuickPort™ connection
- Disk storage from 120MB to 455MB
- Desktop Replacement: Intelligent Docking System with 6 ISA and 2 PCMCIA card slots as well as 4 drive bays for additions such as hard drives, CD-ROM, tape drives and more

intel inside

IntelDX4 is a trademark and the Intel Inside logo is a registered trademark of Intel Corp. TravelMate and "Extending Your Reach with Innovation"

other peripheral devices. When you're ready to hit the road, simply click an icon and the system saves the files you're working on, closes Windows™ and ejects your TravelMate 4000E. Then you're on your way – that's true desktop replacement.

A new dimension in portable computing. The TravelMate M Series.

If you're looking for a notebook computer that is multimedia-ready, TI brings you the new TravelMate 4000M Series. From the moment you see our TravelMate 4000M, you'll appreciate how much performance it packs into its sleek new design and conveniently located integrated pointing device.

Add the light-weight, battery/AC-powered Portable CD-ROM Docking System and you have an integrated portable multimedia system. Now you can tap into the growing library of information and applications available on CD-ROM. Use the TravelMate 4000M as an incredibly powerful presentation tool, training or auditing system and more – complete with sound and full-motion video capability.

To find out how you can get together with the ideal TravelMate, just call **1-800-TI TEXAS** (1-800-848-3927). We'll help you find the perfect mate.

from Texas Instruments.
mate for everyone.

TravelMate M Series

- Four 486 models ranging from a 25MHz to a racy IntelDX4™/75MHz
- Built-in PCMCIA slot, integrated pointing device, SCSI II interface, 16-bit sound, internal microphone and speaker, and a 16-bit MIDI port
- Disk storage from 120MB to 340MB
- Portable CD-ROM Docking System option with a double-speed CD-ROM drive and built-in stereo speakers

EXTENDING YOUR REACH WITH INNOVATION™

TEXAS INSTRUMENTS

Circle 163 on reader service card.

are trademarks of Texas Instruments. Windows, BallPoint and QuickPort are trademarks of Microsoft Corporation © 1994 TI

80MHz PowerPC: Apple Power Macintosh 8100/80 AV

Best of **Both?**

FILEBOX

POWER MAC 8100/80 AV

Pros: Astonishing raw power for native graphics applications.

Cons: It runs Windows, but only reluctantly.

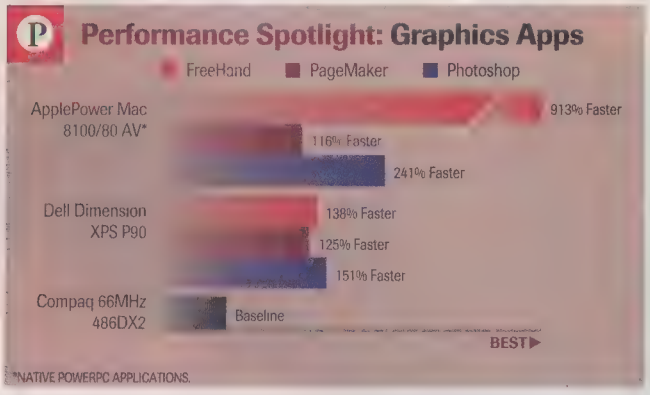
Suitability: A graphics professional's dream machine.

Extras: 16-bit stereo sound, dual-speed CD-ROM drive.

$7,592
Apple Computer
(800) 776-2333
(408) 996-1010
Reader Service No. 686

Never thought you'd love a Mac, did you? Neither did we. Yet by anyone's reckoning, Apple has done a smashing job with the Power Macs it introduced in March to great media buzz. Not only do the machines run both Windows and Macintosh software, but they provide true RISC power for the lowest price you'll find anywhere.

Our tests of the top-of-the-line 80MHz Power Macintosh 8100/80 AV demonstrated breathtaking performance when the machine ran native applications—roughly the same performance you'll get from a 90MHz Pentium system. Likewise, most current users of 68030-based Macintosh systems will see a slight performance improvement, or at least no hit in performance (for those who use 68040 machines).



Go Native: Apple's system races at native graphics programs, particularly math-intensive ones such as Aldus's FreeHand that avail the chip's superscalar architecture.

Windows Emulation Windows performance is another matter. Even the Power Mac 8100/80 AV chugged well behind a 66MHz 486DX2 when emulating Windows applications via Insignia Solutions' SoftWindows. Speed more closely approximated a 25MHz 486 or, in some cases, a 386. You'll be underwhelmed.

Still, the machines offer a lot for the money. All Power Macintosh systems come in an audio/video configuration—an A/V card that plugs into the machine's processor direct slot and an internal dual-speed CD-ROM drive. The 80MHz model comes with three full-sized NuBus expansion slots.

Borrowing from PCs Apple plans to eventually adopt PCI local bus. It also borrowed a 256K level-2 cache from the PC world. Our system came with 24MB of RAM (8MB is standard), expandable to 256MB, and a 1GB SCSI hard drive. Prices start at a minimal $2,200 for the 60MHz version with a 14-inch monitor, then run steeply upward, as our $7,592 test model shows.

Should you bite? If you need a hearty RISC workstation that dabbles in *x*86 applications, you'll find the Power Mac a great solution. But most of us will wait until key *x*86 applications are recompiled into the PowerPC's native mode. IBM's PowerPC, due this fall, may help sway software developers to bring their applications over. Until then, the risks are too high.

Throw your Windows wide open.

Introducing OS/2 for Windows

Break down the walls around your Windows.™ *OS/2® for Windows* rises above the limitations of DOS, Program Manager and File Manager, unlatching a higher level of power and performance.

Add *OS/2 for Windows* to your current Windows 3.1 setup. Now you can multitask DOS and Windows programs with more speed and reliability than ever before. Print out a WordPerfect® document while you download files from CompuServe,™ without fear of the dreaded General Protection Fault. Watch your multimedia programs really sing—and dance—with incredible audio/video synch. Right from Windows, launch into 32-bit OS/2 programs that take advantage of the full power of your PC. Or break free from the confines of Windows. The object-oriented OS/2 Workplace Shell™ interface brings "drag and drop" ease to file and print management, customization and more.

To order or to find out more, call 1 800 3-IBM-OS2. In Canada, call 1 800 465-7999. *OS/2 for Windows* is also available at local software dealers. If you use Windows, this is one window of opportunity that's wide open.

HOW OS/2 AIRS OUT YOUR WINDOWS:

Brings your PC up to speed: *exploit the 32-bit power and performance of 386SX processors—and beyond.*

Increases your productivity: *run more than one program at a time with greater reliability.*

Gives you more programs to choose from: *run DOS, Windows and OS/2 programs.*

Saves you money: *no need to buy various utilities to improve Windows performance.*

Operate at a higher level.™

This ad was created by LINTAS and got to this publication on time using DOS, Windows and OS/2 programs running on OS/2. IBM and OS/2 are registered trademarks and "Operate at a higher level" and Workplace Shell are trademarks of International Business Machines Corporation. Windows is a trademark of Microsoft Corp. All other products are trademarks or registered trademarks of their respective companies.
© 1993 IBM Corp.

IBM®

90MHz Pentium: Dell Dimension XPS P90

Speed Demon

FILEBOX

DIMENSION XPS P90

Pros: A marvel of design and performance. Runs toe-to-toe with PowerPCs.

Cons: Affordable for a Pentium—but still more than four grand.

Suitability: A perfect match for today's—and tomorrow's—apps.

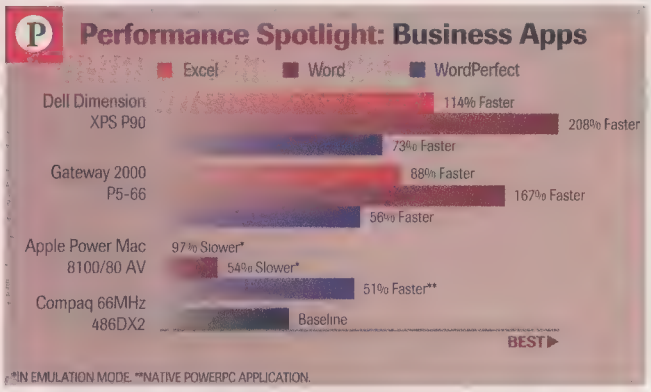
Extras: 17-inch monitor, 16-bit sound.

$4,319
Dell Computer Corp.
(800) 289-3355
(512) 338-4400
Reader Service No. 687

There is an outfit in Russia that lets anyone with the cash ride in a MiG fighter for $4,000. Here's a better buy for thrills: Dell's Dimension XPS P90. It is, quite simply, the fastest PC we've seen.

Hand it to Dell for its engineering wizardry. Like most Pentium systems, the Dimension XPS P90 uses PCI local bus. Our evaluation unit came with a 1GB Enhanced IDE hard drive on local bus, as well as Number Nine's blisteringly fast #9GXE64 Pro video card, stocked with 4MB of VRAM.

64-Bit Video As our performance benchmarks prove, the Dimension XPS P90 races through graphics-intensive applications—more than 200 percent faster than Compaq's ProLinea MT CDS. And it's more than 250 percent faster in business applications such as word processing and spreadsheets.



Pedal to the Floor: Dell's hearty Dimension XPS P90 is 80 percent faster than an average 66MHz 486DX2 and 20 percent faster than a 66MHz Pentium. Sign us up!

Dell's Dimension XPS P90 includes a 256K write-back external CPU cache. Despite the Pentium's dual internal caches (8K for instructions, 8K for data), external caches are necessary for maximum throughput. The Dimension XPS P90 comes standard with 8MB of memory, although you'll certainly want to bump that up to 16MB to see the kind of performance we did with Windows (RAM is expandable to 128MB).

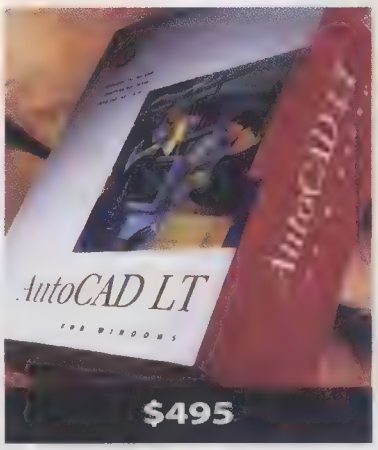
Sound Choice As you'd expect, the Dimension XPS P90 is a multimedia machine—perhaps the perfect multimedia machine, because its fast CPU can truck through rich data types without a gasp. It comes with a dual-speed CD-ROM drive from Panasonic, a Sound Blaster 16 audio card from Creative Labs, and Dell's own 17-inch UltraScan monitor. In addition, the microphone, speaker jacks, and volume controls are easily accessible for business presentations spiked with animation or video.

In case it's not already obvious, we like Dell's Dimension XPS P90 despite its big, boxy case. And while fast Pentiums already appear in Dell's OmniPlex system line, we're delighted to see a value-line PC sporting this much power. Don't let its $4,319 price fool you; the Dimension XPS P90 cuts no corners. Dollar for dollar, it's a power user's dream.

The success of AutoCAD has inspired dozens of cheap imitations.

If you need a CAD package but don't need all the sophistication of AutoCAD® software, don't settle for a cheap imitation. Get new AutoCAD® LT for Windows.™ Unlike those "bargain" packages, it's based on the world standard—AutoCAD—and gives you features the others can't duplicate. Like more accurate 2D drawing tools for designing discrete parts. 3D design and layout tools and full support for layers and blocks. And drawings you can link, so changes on the master are automatically reflected in other drawings. What's more, making these drawings is as easy as using a few simple icons and tools. But if you do find yourself with a question, you'll have access to on-line help as well as free 90-day product support. And since AutoCAD LT reads and writes data just like AutoCAD software, your work will be compatible with over a million AutoCAD users worldwide. Chances are your clients and colleagues are among them. So beware of cheap imitations. Visit your Authorized AutoCAD Dealer or leading retail software store. Or, for a free demo disk, call 1-800-228-3601 and ask us for Demopack A217. Outside the U.S. and Canada, fax 415-491-8311.

And one inexpensive one.



Autodesk.

©1994 Autodesk, Inc. Autodesk, the Autodesk logo and AutoCAD are registered trademarks of Autodesk, Inc. Windows is a trademark of Microsoft Corporation
Company and product names other than Autodesk and Autodesk products are intended to be fictitious. Any resemblance to actual company or product name is accidental.

Final Analysis: How They Stack Up

Chips on the Table

It's too bad sports cars don't follow the same power/price curve of today's top-of-the-line PCs. We'd all drive Maseratis. As the chip wars get hotter and prices plunge, low-performance systems can no longer claim a right to your desktop. But with the flurry of new CPUs landing in the desktop market, finding the system that delivers the best performance for your dollar isn't as easy as it was just a year ago. Our tests helped us answer some key questions:

How do the new chips compare? Pentium systems are rockets when it comes to running sophisticated business and graphics applications, but their real potential lies in forthcoming 32-bit programs, including the next version of Microsoft Windows. Apple's Power Macintoshes, meanwhile, are a logical upgrade for those squarely positioned in the Mac camp, but Windows users will find the selection of native Power Mac applications limited. Finally, clock-tripled 486 systems like those based on the DX4 and Blue Lightning chips are the ideal network nodes—affordable systems for mainstream spreadsheet, word processing, and database applications.

If Pentiums are faster, why buy a system based on the DX4 or Blue Lightning chips? Price. The clock-tripler CPUs now coming to market are 486s that offer as much as a 60 percent performance boost over current 66MHz 486DX2-based systems. They typically cost 20 percent less than comparable Pentiums and face tremendous downward price pressure, thanks to competing CPUs from Cyrix, Advanced Micro Devices, and other newcomers.

As we were going to press, Intel was reported to be cutting DX4 chip allotments to desktop makers and pushing Pentiums in their place. Intel flatly denies that it is orphaning the DX4, and Compaq, Dell, and others continue to actively build desktop systems for the chip. Nevertheless, Pentium prices are falling fast. Although system manufacturers will continue to sell both, 66MHz and 90MHz Pentiums are likely to have the price-to-performance edge by year's end.

DECISION MAKER — CHOOSE A SYSTEM THAT SUITS YOUR APPLICATIONS

1 Choose the factor most important to you.	2 Choose the next most important factor.	3 What else is important?	4 For your needs, the best product to buy is . . .
General Business	Performance	Price	Dell Dimension XPS P90
		Native Applications	Dell Dimension XPS P90
	Price	Performance	Zeos Pantera DX4-100
		Expandability	Zeos Pantera DX4-100
Multimedia	Performance	Price	Dell Dimension XPS P90
		Native Applications	Dell Dimension XPS P90
	Price	Performance	NEC Image 4100es
		Expandability	Dell Dimension XPS 4100V
Graphics, CAD, & Developer's Workstation	Performance	Price	Dell Dimension XPS P90
		Native Applications	Power Mac 8100/80 AV
	Price	Performance	Dell Dimension XPS P90
		Expandability	Dell Dimension XPS P90

Color (kul'er) n. 1. A feature rarely found in low-cost inkjet or dot-matrix printers. *example:* the **TI microMarc Color** printer gives you vivid color for not much more than the cost of a black and white inkjet.

THE UNDER $400 PRINTER, REDEFINED.

If you thought you'd never see a high-quality color printer for a street price under $400,* wait'll you see the new TI microMarc Color, the inkjet printer that's as versatile as you are. At home, you can brighten up schoolwork, do newsletters – even print the rich, detailed colors of today's multimedia applications. At the office, you can add brilliant colors to proposals, charts and presentations. And if that's not enough, just compare the microMarc Color to our leading competitor, HP. From print quality all the way down to printer size, our advantages are obvious. In fact, we're so confident you'll like the new TI microMarc Color, we'll give you our 30-day satisfaction guarantee.** For more information or a dealer near you, call *1-800-TI TEXAS* (1-800-848-3927).

	TI microMarc Color	HP DeskJet™ 500C
Print Quality: Graphics	*300 dpi x 300 dpi*	*300 dpi x 300 dpi*
Resident Fonts	*600 dpi x 300 dpi*	*300 dpi x 300 dpi*
Speed: Color	*Up to 1 ppm*	*Up to .67 ppm*
Monochrome	*Up to 5 ppm*	*Up to 3 ppm*
Memory	*128K*	*48K*
Paper Tray	*120 sheets*	*100 sheets*
Standard Fonts	*5*	*3*
Weight	*11 lbs.*	*14 lbs.*

EXTENDING YOUR REACH WITH INNOVATION™

TEXAS INSTRUMENTS

Circle 155 on reader service card.

energy EPA POLLUTION PREVENTER

*Estimated dealer price. Dealer prices will vary. **Offer applies if returned in good condition. microMarc and "Extending Your Reach With Innovation" are trademarks of Texas Instruments. DeskJet is a trademark of Hewlett-Packard, Inc. Specifications in chart are based on information as of 4/94. © 1994 TI.

Notes:

SYNOPSIS

ASK AND RECEIVE: *Share information with discussion databases.* **140**

STORING YOUR DATA: *Document management over networks.* **142**

CLICK AND SEND: *Use macros for workflow automation.* **146**

NOTES AND THE GANG: *Can Microsoft (and other challengers) take Notes?* **148**

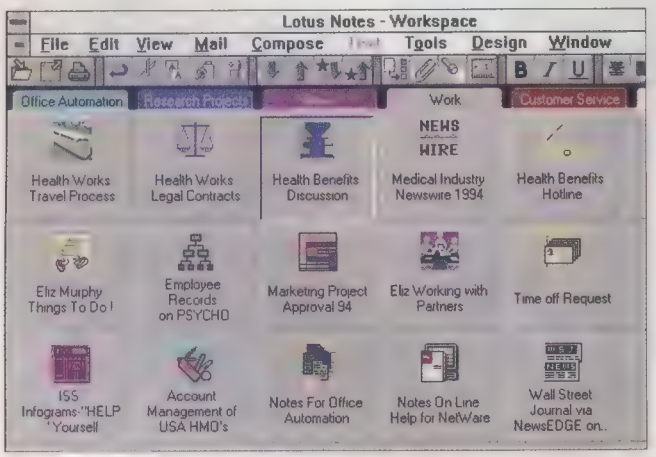
What is this thing called Notes—and why is it such a big deal? For sheer conceptual complexity, Lotus Notes ranks right up there with the greatest mysteries of our age. Explain how Notes works? We'd rather tackle a simpler topic, thank you—like how the great pyramids were built, why the Chicago Cubs haven't won the World Series since 1908, or how the federal deficit is really calculated. But here's the short version: Notes is Lotus Development's long-term gamble that the future of computing is about helping groups of people share information and ideas, even when they're separated by multiple time zones and a couple of oceans.

It's been under development for more than a decade, and in shrink-wrap for more than five years. Today there are nearly one million Notes users worldwide, many in Really Big Business. As its entry cost has dropped over the years to less than $1,000, it has become accessible to smaller companies, too. A joint venture between Lotus and AT&T will soon make Notes even more available and out-of-the-box valuable to anyone with a PC and a modem.

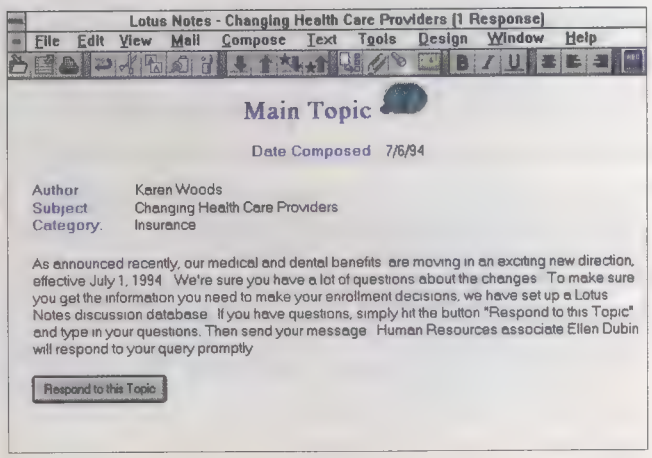
Still don't get it? OK, try this explanation: Notes is a graphical client-server development environment for distributing a new class of information-rich applications.

If that doesn't tell you much, consider this: Its heart and soul is a database. There's a message transport layer—sort of like e-mail on steroids—that constantly compares and synchronizes copies of databases distributed across file servers and workstations. The next node on the network may be right down the hall or

THE NOTES WORKSPACE: Each icon represents a database, complete with data, macros, access control, and replication tools.



DISCUSSION DATABASES: To begin a discussion, use this Main Topic form. The developer who created the screen below has attached a simple macro to an onscreen button that lets you respond easily and instantly.



Mailboxes, Etc.

half a world away—no matter. Notes assumes that people are mobile and that many users are only occasionally connected to the network.

Sophisticated Security Notes is stuffed with security features even an MIS manager would love, including access controls that let you put a "top secret" stamp on sensitive information. Its public-key/private-key encryption techniques are straight out of a Tom Clancy novel: With a roomful of massive parallel processors and a couple of months, you could crack the code on a single message. Maybe.

You can use Notes to create fully indexed libraries of business information, track versions of important documents as they evolve, provide a virtual meeting room for online discussions, or even automate business processes.

It's tied directly to the file system of the computers it runs on, and in some cases, it even replaces that file system with a more intelligent one. This means that Windows users can effortlessly exchange information and ideas with co-workers who use Macintoshes, Sun workstations, or OS/2 systems.

Still don't get it?

That's not surprising. Until they've used Notes, most people wonder what the fuss is all about. And if it's poorly integrated into their working lives, even some Notes users may not get it.

The Notes Advantage There are a hundred ways to misunderstand Notes. The sum of the parts may be impressive, but the parts themselves can be considerably less than awe-inspiring. If all you want is e-mail, you'll be underwhelmed by Notes' clunky mail system. Database developers who are used to building elegant relational models will be frustrated by the flat-file structure of Notes' databases. And when programmers who are used to modern C-like languages or different flavors of BASIC see the cryptic @Function syntax in Notes macros . . . well, they might feel like they've stepped out of Mr. Peabody's Wayback Machine and into the bright sunlight of 1983.

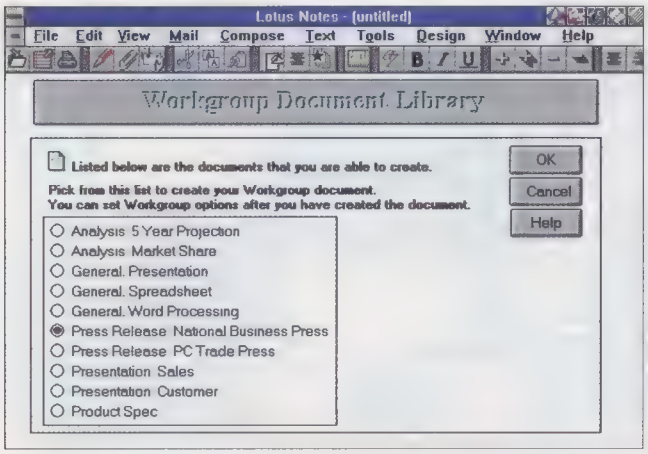
Despite these shortcomings, Notes is successful because no one else does a better job of putting all of the pieces together. If you need a database application that's accessible to anyone in your worldwide organization—with real security and programmatic intelligence—you have two choices: You can hire a team of programmers and turn them loose on the job for a few months, or you can build a slightly less polished Notes application in a few days.

The best way to explain Notes is to look at how it handles typical business challenges. In context, it's easier to see its vast potential, occasionally frustrating interface, and missing pieces.

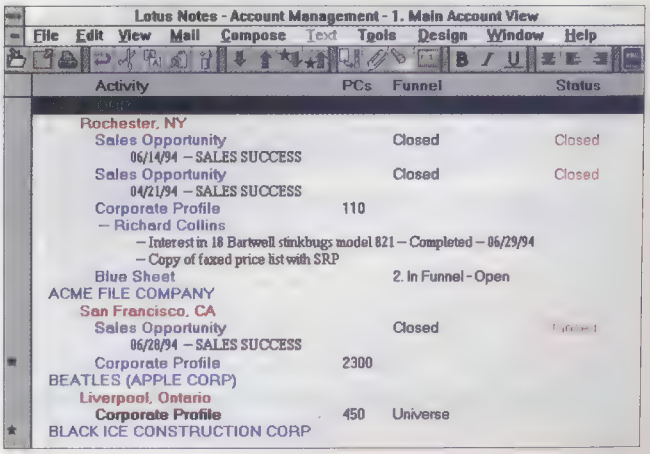
Is this the future of software? Yes. Everyone who's anyone in software—including Microsoft and Novell—has a Notes-killer under development. But for now, Notes is the standard against which they'll all be compared.

BY ED BOTT

DOCUMENT MANAGEMENT: Notes/FX, a document library system, will soon be part of Lotus SmartSuite, a collection of business tools. When you choose a document type from the menu, a custom distribution list is built on the fly.



WORKFLOW AUTOMATION: Business procedures can become routine. This automated sales-tracking database lets your sales representatives and their managers focus on their leads. The stars at left indicate unread documents.



Ask and Receive

The business challenge: Meetings last too long, accomplish too little, and often the people who really need to be there are on the road. E-mail offers only limited help—it's hard to follow a thread or attach supporting documents. As a result, decisions are deferred, strategies are postponed, and business just muddles along.

The Notes solution: discussion databases. These are the meat and potatoes of Notes. Imagine an ad hoc bulletin board, a sort of do-it-yourself CompuServe-style forum for anyone linked to the network. You can follow threads, create responses, control who participates in a conversation, even forward notes via e-mail or fax.

The basic building blocks of Notes databases are documents and responses. A document can be a simple half-page memo or a complex report stuffed with text, graphics, scanned images, voice messages, and even video clips. A response is a special subclass of documents, usually indented beneath the document to which it responds.

To start a new thread in a Notes discussion database, you choose a form from the Compose menu. The data that appears in the individual fields on the form comes from a variety of sources. Some, like the author's name and department, may be filled in automatically by formulas that look up entries in the Notes address book. Others, like the topic and message contents, are under your control. The form designer (any workgroup member) may add radio buttons, check boxes, or keyword lists to limit the entries allowed in crucial fields.

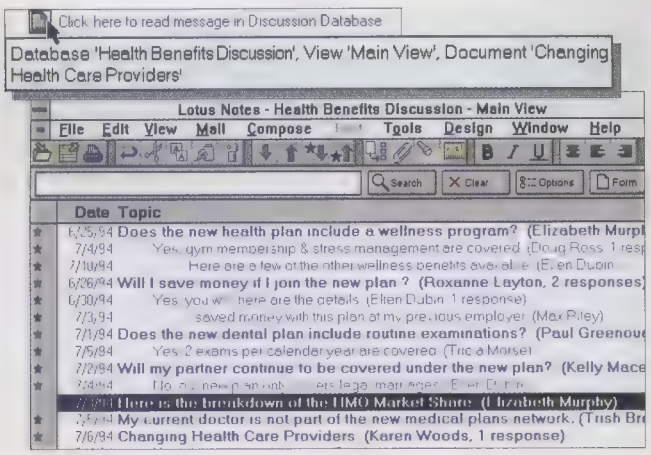
Anyone can participate in a Notes discussion—as long as the database manager grants them access rights. Notes uses a hierarchy of access privileges to control who does what in a database. Managers, for instance, can edit forms and views, add and delete documents, and revise access lists. Editors can change and delete any document, while Authors can read all documents and add new ones, but edit only documents they've created.

Speak Out Participating in a Notes database is easy if you have a direct connection to the server on which the original database is stored. But notebook users and network clients on other servers can also join in thanks to Notes' secret weapon: replication (see "Notes Replication Keeps Databases in Sync with Each Other," page 143).

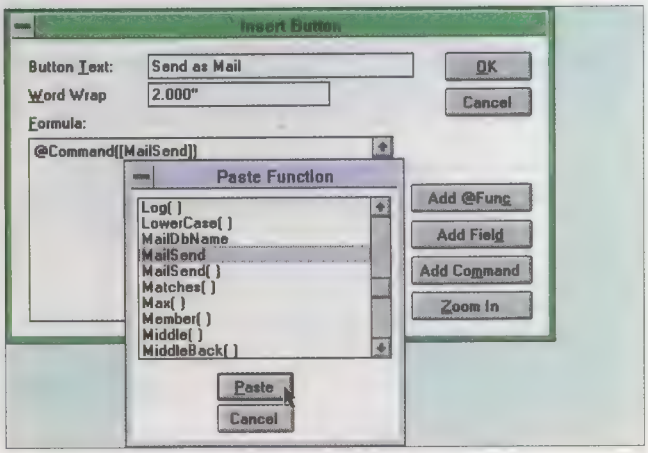
Linking Notes As long as key participants can be reached via e-mail, the flow of information doesn't stop if they don't check in for a few days. The trick is to build a simple formula that links selected document types to e-mail. For example, the Notes designer might add a check box labeled "urgent" to a template. When that box is checked in a given document, it triggers a formula that forwards a short message to a predefined list of e-mail addresses. Or the mail message can contain a Notes DocLink—a push button that lets the recipient hook right into the discussion database and read the associated document instantly.

Notes discussion databases aren't perfect. Like most Notes databases, they're only effective when every member of the workgroup participates actively in them, and securing that kind of cooperation can be management's worst nightmare. But when the members of a workgroup use them diligently, Notes-based discussions can have powerful results.

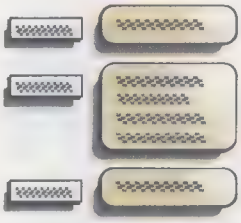
PARTICIPATION: With two mouse clicks you can add a DocLink, complete with pop-up help, to an e-mail message. As shown here, the push button at the top lets your recipient join the discussion below immediately.



RESPONSES: The Notes macro language may be quirky, but building a macro formula is as simple as clicking your mouse. In this case, you can use the pop-up list to paste @Functions into a button macro.



Databases are the basic working units of Notes. They're represented on the desktop by icons you add to the Notes workspace. Each database consists of a group of **documents,** and their **forms** (with data **fields** filled in) and views, stored under one name. A database can be simple (an address book with a few documents and a single view) or staggering (the plans for a major office complex, with tens of thousands of documents and hundreds of views). The database and document **headers** allow data to be easily managed and replicated.



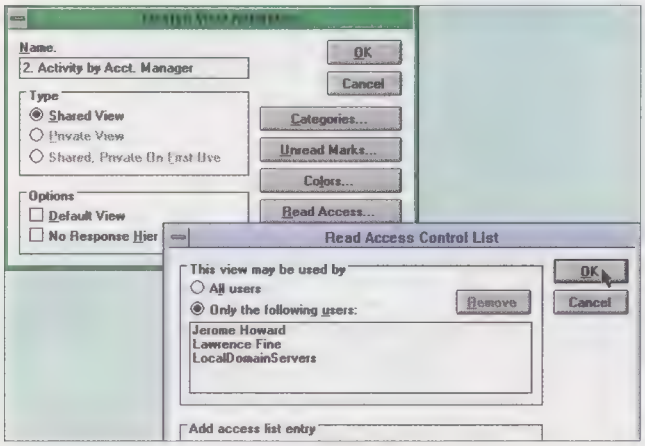
Databases Groups of information that can be organized by topic or other criteria are called databases and serve as the basis for workgroup activities.

Documents Each database contains a set of documents. Some documents contain definitions of forms and views, others contain data.

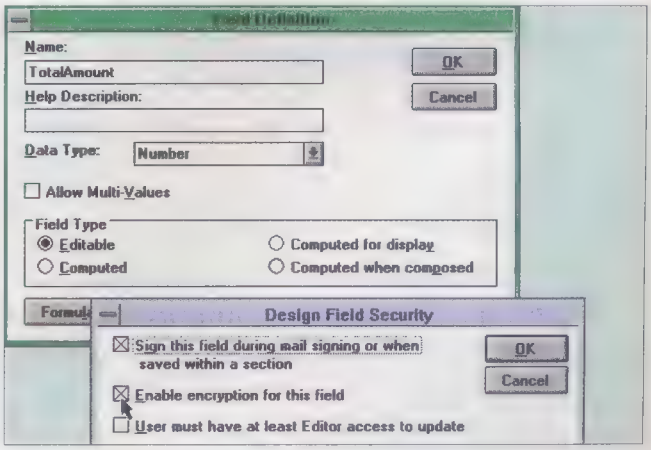
Forms and Fields Special template documents called forms can be controlled by formulas and macros that validate input, fill in data, or even launch complex sequences of events. Data is entered and stored within each document in a set of fields. Each field has a name, a simple or structured data type, and contents. It may also contain formula-based macros that run when certain events occur.

Headers The information at the top of each database and document lets the database replicate itself across a network or phone line. The database header contains information about contents, replication settings, and access privileges. The document header includes ID fields for the note and its originator, plus information about when the document was last accessed or changed.

ACCESS CONTROL: As a database developer, you can control access to the database by assigning rights governing user's abilities to read and modify data. You can also limit certain views to specific users, as in this example.



SECURITY: Notes uses the public-key/private-key encryption method to protect data. As a general user or the database designer, you can encrypt an entire database or limit encryption to just a single field, as shown here.



Storing Your Data

The business challenge: Let's be honest, most business documents are mind-numbingly repetitive—just variations of paperwork we've produced ad nauseam. Fill-in-the-blank templates make it easy to concentrate on content instead of form. But with employees scattered around the globe, how do you guarantee that they're using the most up-to-date templates?

The Notes solution: document management. Any business that's interested in productivity uses the built-in template features of spreadsheets, word processors, and presentation graphics programs to automate the process of creating standard documents. Notes lets you store these templates in searchable, fully indexed libraries that can be updated quickly across networks.

In its Windows version, Notes uses OLE to manage file objects. (The Macintosh version uses System 7's Publish & Subscribe feature, while the Sun/Unix versions use a Lotus-developed analog of OLE called LEL—short for Link, Embed, Launch-to-Edit.)

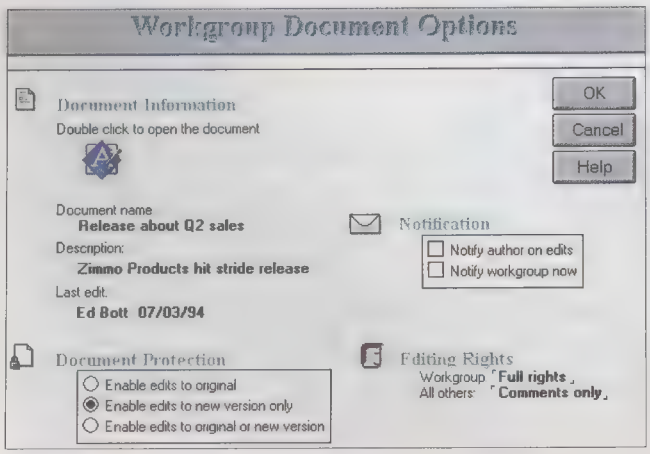
Using a Notes document as a "wrapper" for an OLE object is easy. First, you create a Notes form with fields for title, date created/updated, and so on. Next, you add a "rich text" field—a field especially designed to accommodate an OLE object—and insert an object like a 1-2-3 worksheet or Visio drawing. Use the program that created the object (1-2-3 or Visio) to define standard text, formatting, and how the form handles stored objects. For example, you could hide the Notes document and launch directly into the external application when a document is created or edited. Save the form and Notes becomes the launching pad (literally) for new files created with any application.

Updating standard document types is automatic, thanks to Notes' savvy replication procedures, which distribute forms (and their embedded file objects) to each copy of the database on a regular basis. If the developer keeps the documents in a design template, the updates even trickle down to second-generation databases modeled on the original design.

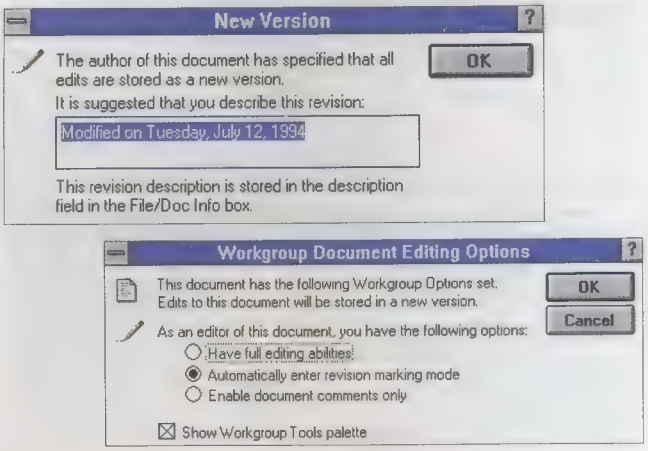
FX Control A feature called Notes/FX (field exchange) extends the capabilities of OLE and makes document libraries and other Notes applications even easier to use. Normally, when you double-click on an embedded object, you turn over control to the object's OLE server—the application that created it. Notes/FX adds a set of OLE-standard interfaces to pass information in either direction between Notes and the OLE server application. Some examples? Notes/FX can fill in an expense worksheet with the author's name and department, and an FX-compliant application can pass spreadsheet totals from the expense worksheet back into a Notes document.

Third-Party Compatibility Lotus applications were the first to be FX-enabled. By the end of summer, expect all of the applications in Lotus's SmartSuite to be compatible with Notes/FX. In addition, some third-party developers have announced or shipped FX-compatible programs. These include Microsoft's Word, Excel, and Powerpoint, which will all support Notes/FX by fall; Clear Software's allClear, a flow-charting program (reviewed in New! May, page 54); and No Hands Software's Common Ground, a tool for distributing formatted documents (reviewed in New! March, page 45).

DOCUMENT CREATION: Notes launches the editor (Ami Pro, in this case) and lets you create the document. Back in Notes, you'll see a screen like this one. Notes/FX has filled in your name and the last-edit date.



NEW VERSION: You can request to be notified by mail when the document is read or edited, and you can restrict others from changing your work by enforcing the use of revision marks and saving edited documents as responses.



WHAT IT MEANS NOTES REPLICATION KEEPS **DATABASES IN SYNC** WITH EACH OTHER

Notes data is distributed across networks and can be stored anywhere—on a NetWare server in Chicago, an OS/2 server in London, or a notebook PC somewhere over the Pacific Ocean. Local **replicas** of the shared data allow users to add and modify documents. To keep the database copies in step, **connection documents** specify a schedule for linking the Notes servers and resynchronizing the database completely or within **parameters.** To do this, Notes identifies matching pairs of **document IDs** and updates older documents.

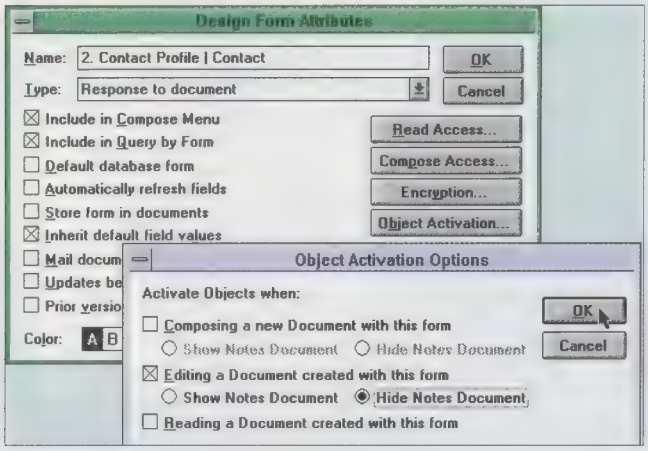
Replicas To create a database replica, Notes copies the original database and adds special fields to track the replication history. You can create as many replicas as you like. One replica of a sales tracking database might be stored on a server, while another is saved on the sales manager's notebook.

Connection documents Information in the databases' connection document tells the server copies how often to connect and what actions to perform.

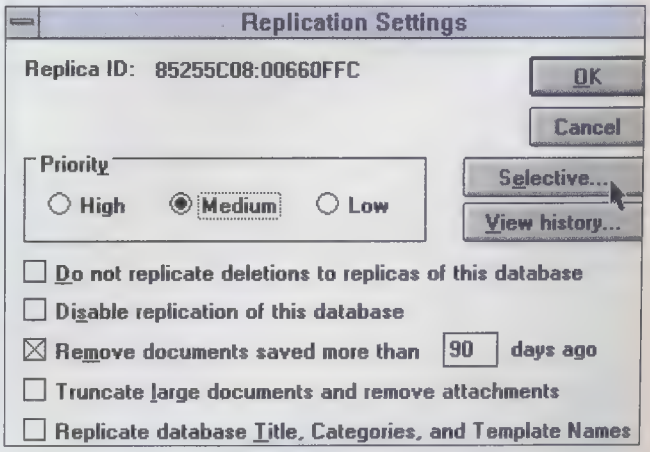
Parameters Remote users typically connect to the server by telephone. Because space on a remote PC is limited, Notes allows you to set parameters for selective replication—by date or topic, for instance.

Document IDs When a server receives a request to replicate, Notes checks the identity and access rights of the machine making the request. Replication itself is a document-by-document comparison: Notes identifies matching pairs of documents by comparing the document IDs found in their headers. When replication times on documents with matching IDs differ, Notes synchronizes them by copying the new document over the older one.

CONTACT PROFILE: To create "seamless" embedded objects, choose the Hide Notes option from this dialog box. When this button is selected, no double-clicking is required; Notes "activates" the object automatically.



REPLICATION SETTINGS: What do you do when the database is 100MB and you have only 10MB of free disk space? Selective replication—by date or by formula—is the answer. Connected servers will resync data.



· ADVANCED RISC TECHNOLOGY.
· ONBOARD ETHERNET.
· 72 MEGABYTES OF RAM.
· 16-BIT STEREO SOUND.
· VIDEOCONFERENCING AND VOICE RECOGNITION.
· PLUG-AND-PLAY EXPANDABILITY.
IF I GET RID OF THE AQUARIUM, I COULD PUT ONE IN MY DEN.

Think of it as the Macintosh for people who thought they could never have a Macintosh.

Check your preconceptions at the door.

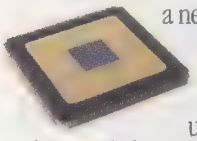
This isn't just a new family of Macintosh® personal computers. It's a whole new kind of personal computer.

A new architecture. A new chip. A new standard that exceeds previous personal computing standards – yet works with DOS, Windows and Macintosh.

Introducing Power Macintosh.™ It's more powerful than a Pentium processor-based PC. It's more human than a Macintosh. It's the most powerful line of personal computers in the world.

The power of Apple, IBM and Motorola.

At the heart of Power Macintosh is the PowerPC™ 601 microprocessor: the first of a new family of ultra-high-performance RISC chips developed in a unique three-year collaboration between Apple, IBM and Motorola.



The PowerPC 601 has a lot of power inside it: the combined resources of IBM, Motorola and Apple.

The RISC technology of Power Macintosh brings a whole new level of performance to personal computing. Software written to take advantage of its unique new capabilities, in fact, will run significantly faster than the same programs written for 486 or Pentium processor-based PCs.

Combine the power of RISC with the practical simplicity of a Macintosh personal computer, and the result is more work done in less time, with lower support costs.

The power to run MS-DOS, Windows and Macintosh software.

Many Power Macintosh configurations come bundled with SoftWindows™ from Insignia Solutions, an innovation that lets Power Macintosh run hundreds of off-the-shelf MS-DOS and Windows applications at 386 and 486 performance levels. (Of course, Power Macintosh runs thousands of Macintosh productivity programs, too.)

This is just the most recent example of Apple's commitment to making it easier for MS-DOS and Windows users to take advantage of Macintosh innovations.

The power of RISC for as little as $1,819.*

These days, the whole personal computer industry is buzzing about the potential of RISC processor technology in PCs.

"My next computer will be a PowerPC. I was using Intel-based machines long before the PC was a glimmer in IBM's eye, but as Emerson said, foolishly held consistency is the hobgoblin of little minds.... It's time for a change, and the time is now," wrote Bill Machrone in *PC Week*. "That next machine will probably wear an Apple logo.... Apple appears to be a good six months ahead of IBM in terms of [PowerPC] product development and software integration."

Power Macintosh	6100/60	7100/66	8100/80
Processor	PowerPC 601	PowerPC 601	PowerPC 601
Speed	60 MHz	66 MHz	80 MHz
Memory	8MB to 72MB	8MB to 136MB	8MB to 264MB
Expansion slots	1 PDS or NuBus	3 NuBus	3 NuBus
Hard disk storage	160MB or 250MB	250MB or 500MB	250MB to 1GB
Video support	DRAM	DRAM VRAM 1MB to 2MB	DRAM VRAM 2MB to 4MB
Networking	Ethernet	Ethernet	Ethernet
Apple Price	From $1,819	From $2,899	From $4,249

All this plus built in Macintosh PC Exchange, AppleScript, QuickTime software, TrueType fonts, 16-bit stereo sound, file sharing and more.

Call 800-732-3131, extension 600, for the name of your authorized Apple reseller.

And find out about the power that will change the way you think about Macintosh.

The power to be your best.®

From left, the new Power Macintosh 8100/80, Power Macintosh 7100/66 and Power Macintosh 6100/60.

Introducing Power Macintosh.

Apple

*Effective 3/14/94, Apple Price includes the Power Macintosh 6100/60 with 8MB of memory and a 160MB hard drive. For the sake of custom configuration, keyboard, monitor and mouse are sold separately. Unless bundled with a particular configuration, SoftWindows must be purchased separately. Retail prices may vary depending on location. © 1994 Apple Computer, Inc. All rights reserved. Apple, the Apple logo, Macintosh and the power to be your best are registered trademarks of Apple Computer, Inc. AppleScript, Macintosh PC Exchange, Power Macintosh, QuickTime and TrueType are trademarks of Apple Computer, Inc. PowerPC is a trademark of International Business Machines Corporation used under license therein. Windows is a trademark of Microsoft Corporation and SoftWindows is a trademark of Microsoft Corporation used under license.

Click and Send

The business challenge: In the tick-tock of the Nanosecond Nineties, competitive advantage is defined by the ability to respond in an instant. No one wants to wait—not contractors, not co-workers, and especially not customers. If you can't deliver, someone else will. So you need to know the details fast. For routine jobs, automation works best: Even complicated business processes can become push-button procedures. But with traditional tools, application development can take months, even years. How do you cut the response time to days?

The Notes solution: workflow automation. Notes is tailor-made for the quick development of applications that help groups of people process information collaboratively. Other database tools are more powerful, but none has Notes' built-in messaging capabilities, global addressing, and security features.

Easy Applications Developing a Notes application isn't particularly difficult, although the program could stand some usability improvements. Experienced Notes developers should have little problem scaling up simple departmental applications built in a few hours to serve an entire enterprise.

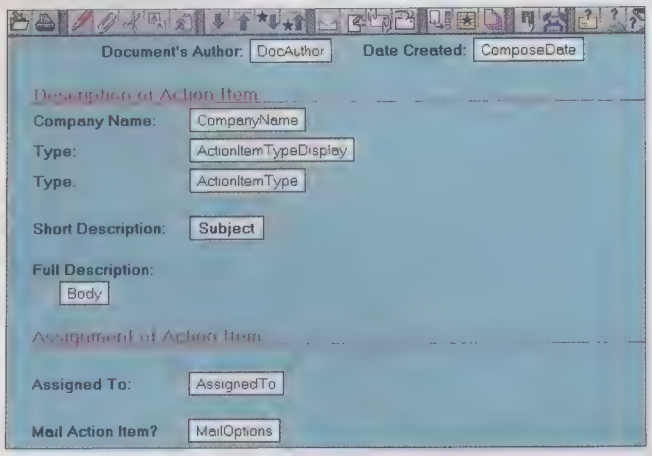
For one-of-a-kind projects, Notes can serve as a capable project manager. For example, a group of engineers might create a Notes database to track a complex design project. Sections of the database created in advance could include attachment documents for progress reports, meeting agendas, follow-up reports, scanned-in drawings, and spreadsheets. As the project proceeds, individual team members fill in the details. And at any point, a workgroup member with proper access could check the project's status.

Programming with Notes Notes applications can also automate routine processes. Operators taking calls on a toll-free number, for instance, might capture information using a simple Notes form with three radio buttons. Requests for information would be automatically routed to the mail room, complaints would be fired off to a supervisor, and order information would be forwarded to the warehouse and the accounting department.

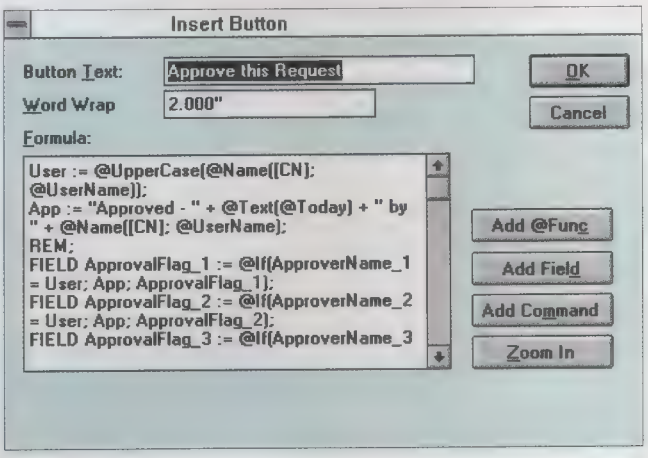
To add intelligence to a Notes database, you must enter the arcane land of Notes formulas and macros. There are almost 200 @Functions and macro fields in the Notes macro language. They can be attached to fields, buttons, or SmartIcons; executed automatically in the background every hour or every day; or set to trigger each time a new document is created. A background macro might pay for itself by scanning the Incoming Calls database each morning for documents that are more than three days old and have "unresolved" as the value in the Status field. The resulting list of potentially unhappy clients would then automatically be mailed to a supervisor.

What if key members of the workgroup aren't part of the network or are away from their usual network connections? Promising Notes extensions enable communication via paper, fax, and even telephone. A series of document imaging add-ons make it possible to scan printed documents, convert them to text using an OCR server, and store the results in Notes documents. Another add-on lets you manipulate Kodak Photo CD images. It's even possible (although not necessarily easy) to capture voice calls and save them in Notes messages.

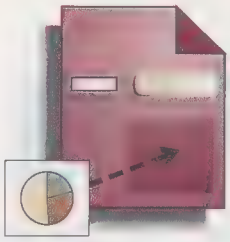
ACTION ITEM: The MailOptions field appears on the Action Item form as a radio box (bottom). When you select it, built-in Notes routines send an e-mail message to the co-worker you've named in the Assigned To field.



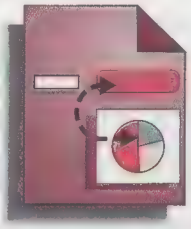
CREATING ROUTES: Notes uses macros to route documents when they're saved or edited, or when you click on a predefined button. In this screen, an "Approve this Request" routing button is being defined.

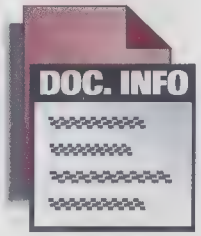


WHAT IT MEANS SHARE INFORMATION AND **MANAGE FILES** VIA NOTES AND OLE



A secret weapon called Notes field exchange (Notes/FX) teams Notes with OLE to manage files and pass information smoothly between Notes databases and applications. First, users **create** the note and **compose** a message. When the user chooses **Update,** Notes taps workgroup editing features and remote accessibility to share information among linked Notes files. Finally, users can **access** the document easily, since Notes avoids frustrating and limiting 8-dot-3 filenames, making Notes' fully indexed document libraries easy to search.





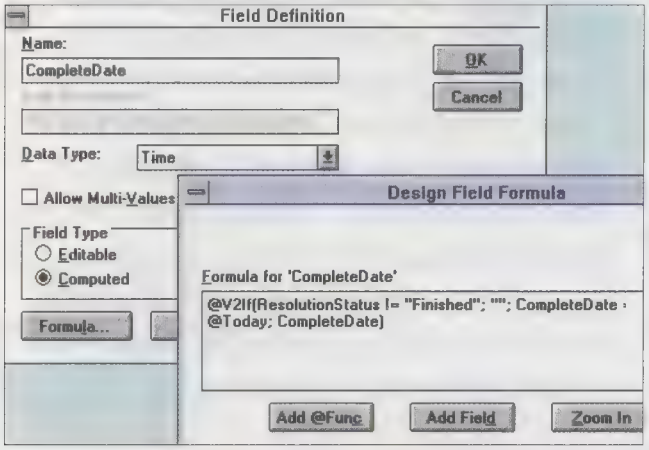
Create The application developer creates a form with an embedded OLE object and tells Notes to make the object "seamless" by hiding the Notes document. For example, a Lotus 1-2-3 spreadsheet can launch a workgroup request for information.

Compose When the user chooses Reply from the menu, Notes activates the OLE server, 1-2-3. The Notes application programming interface (API) lets the spreadsheet program know that the user is composing a new document.

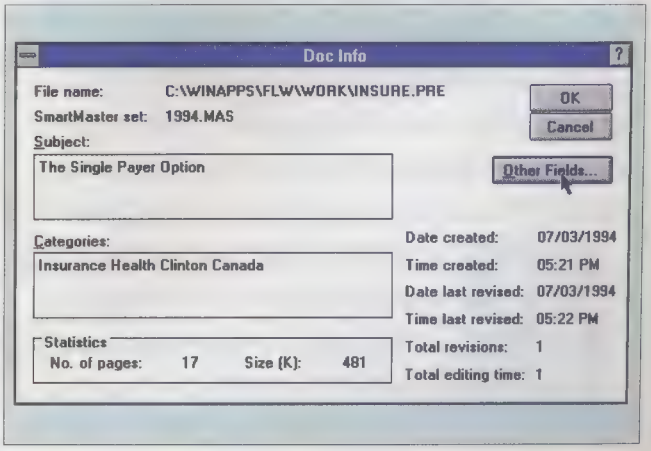
Update The user fills out the reply template and chooses Update from the 1-2-3 menu. Predefined links between the 1-2-3 object and the Notes document mean that changing a field in one updates the other. The Notes/FX protocol retrieves the contents of field names and updates both the Notes and application sides of the OLE communication.

Access After saving the Notes document, the user can choose a Notes view to see vital statistics such as the document's long filename. Any user with the proper access rights can now sort, filter, view, and replicate part or all of the collection of documents.

AUTOMATED RESPONSE: Field definition formulas let you automatically fill in values in response to system events. In this case, Notes puts the date in the CompleteDate field when you click on the OK button.



DOCUMENT INFORMATION: Notes/FX cuts to the chase. Here, the Doc Info dialog box in Lotus Freelance Graphics has been premapped to matching fields in any Notes application, facilitating the exchange of information.



Notes and the Gang

When all you have is a hammer, everything starts to look like a nail.

That's the danger of using an all-purpose development tool like Lotus Notes when another solution might be more appropriate.

Although Notes offers a unique mix of application-building gizmos and message-handling smarts, it's not alone in tackling typical business problems.

Workflow Simple workflow automation is a cinch for a well-integrated mail package like Microsoft Mail. Combined with Word, Excel, or other applications in the latest release of Microsoft Office, Microsoft Mail makes it easy to route a document to a group of co-workers, simultaneously or serially. Lotus offers similar capabilities by combining its own cc:Mail and Lotus SmartSuite.

Other mail-based solutions can duplicate key features of Notes without requiring its long-term commitment. For example, BeyondMail's forms generator and rule-based message-handling system make its e-mail system smarter than most competitors.

If you don't mind slinging code, some mail-based applications can be considerably more flexible than Notes. Microsoft's Visual Basic and Lotus's LotusScript both offer full-strength macro languages that promise to tie off-the-shelf business software into your mail system using OLE 2.0. Borland's Object Exchange (Obex) ties applications like Paradox and WordPerfect for Windows together, but it hasn't gathered much support from other software labels.

Microsoft has already delivered its less-than-$100 Office Developer's Kit, a bundle of Visual Basic, sample applications, and 350MB of documentation designed to let small developers compete with large consulting firms.

Database Applications Powersoft's PowerBuilder and Oracle's Oracle 7 are top examples of no-compromise client-server applications that can tap into relational databases across an enterprise-wide network. Significantly, Powersoft recently shipped its PowerBuilder Library for Lotus Notes, which lets client-server applications tap into Notes database files.

Lotus invented the groupware category in the early days of Windows when critics scoffed that Notes was an answer to a question no one even wanted to ask. The new wave of workgroup-enabled applications now competing with Notes is an emphatic endorsement of Lotus's strategy.

Groupware Notes' most serious short-term competitor is likely to be a descendant of WordPerfect Office, a mail-and-scheduling–based groupware package that new owner Novell may soon beef up. WordPerfect Office already has most of the pieces to compete toe-to-toe with Notes: a powerful messaging engine; a group scheduling program (missing in Notes); a telephone access server; a wide variety of connections to external databases; InForms, a forms development package that lets you build Notes-style forms with intelligent macros attached; and routing capabilities.

SoftSolutions, a recent purchase of WordPerfect, offers sophisticated document management tools that integrate more fully into a wider variety of applications than today's Notes/FX. With the rumored addition of a replication capability (and possibly a new name), WordPerfect Office may become Notes' most serious competitor.

Outside Lotus

A thriving community of third-party developers is already delivering Notes solutions. Last December's **LotusSphere** conference drew 2,500 attendees, including more than 1,000 Notes developers. Collectively, they offer hundreds of prebuilt applications. For a free catalog, *The Lotus Notes Guide,* call (800) 343-5414.

PUBLIC EXCHANGE Lotus and AT&T have unveiled **AT&T Network Notes,** a network of cooperative Notes servers accessible via a toll-free number to businesses and individuals willing to pay for service. Users will have access to rich (and secure) public databases and interactive information exchanges, without the administrative burden and expense of maintaining a Notes network.

There's nothing like highly publicized vaporware to cloud the long-term picture. Notes' most notable potential competitor (it's at least a year away) is Microsoft's Cairo operating system. With its built-in object-oriented filing system and enterprise-wide messaging features, Cairo may build Notes-style functionality right into the operating system. But it's only a distraction for businesses today.

With Notes Release 4 in development, Lotus should consider putting some distance between itself and the competition. The company will have to pay attention to entry costs, which are too high despite the gesture made in the affordable Windows Starter Pack. The dated interface and rudimentary editor found in Notes Release 3 need improvement. Keeping a Notes server humming should be much easier. Likewise for application development.

And finally, there's the culture thing. Notes can be a tool for revolutionary change—or just an expensive and awkward e-mail system. The key to successful implementation of Notes lies in simultaneously effecting shifts in work habits and corporate culture.

AT A GLANCE

LOTUS NOTES

Notes gives new hope to the slow starters of the world. Though it's one of the oldest Windows applications around, Notes reached critical mass only in the last 18 months. It's dogged by myths, including the persistent criticism of its high cost and inflexible hardware demands. With recent releases of a low-cost Windows server for Notes, plus NetWare and Unix versions, that's all changed. But old images die hard.

Where does it run?	Just about everywhere. Notes runs as a client or server on OS/2, Windows, and Unix (Hewlett-Packard and SunSoft Solaris versions), and as a Mac client. A server version for the NetWare Loadable Module is available now; one for Windows NT (Intel only) is due later this year.
What does it cost?	With an initial price of $62,500 for the server software and 200 client licenses, Notes was originally positioned as a tool for large enterprises. Today a Windows Starter Pack with two client licenses and one server license costs just $995.
What are the system requirements?	For a Windows client: 40MB of hard-disk space, at least 6MB of RAM, and a compatible network. For a Windows server: 200MB of hard-disk space and 12MB or more of RAM for ten users. For NetWare, Unix, and OS/2 servers: at least 16MB of RAM.
Isn't it a pain to administer?	Well, yes, but it's no more difficult to administer than any other enterprise-wide application. Release 3's remote administration tools help considerably.
How hard is it to write Notes applications?	If you've ever written a 1-2-3 macro, you can build a Notes database. For sophisticated applications, plan on a week of training to get comfortable with programming Notes.
Can I buy ready-made third-party applications?	Sure. Hundreds of third-party applications are already available and more are on the way. They range from low-cost generic applications to mission-critical industry-specific systems.

Lotus Notes Release 3 / Lotus Development Corp. / (800) 346-1305 / $995 (Windows Starter Pack) / *Reader Service No. 690*

SHARING DATA Houston-based Wolf Communications is also offering a wide-area Notes service, but with a twist that ought to attract small and midsized businesses: On the company's **WorldCom** service, you can share databases, replicate remotely at speeds of up to 14,400 bits per second, and deliver Internet mail and Usenet newsgroups directly to a Notes workgroup.

GROW YOUR NOTES Fax gateways and document imaging add-ons are already included in Notes; multimedia is next. **Video Notes** puts videoconferencing capabilities on top of Notes mail. **Phone Notes** stores voice mail and e-mail in the same in-basket, and gives your customers dial-up access to recorded information or fax-back data sheets from a Notes database.

THE BEST-SELLING WORD PROCESSOR

The processor that

WordPerfe

$49.95
WordPerfect®
5.1+ for DOS

$99*
WordPerfect®
6.0b for DOS

$99*
WordPerfect®
6.0a for Windows

WordPerfect® is the world's best-selling word processor ever. And right now is the world's best time to upgrade ever. We're offering three great new versions—at unbelievably low upgrade prices (but only until August 31). And you don't have to be a WordPerfect user to upgrade. Owners of competitive packages can upgrade as well. It's our biggest promotion ever.

New WordPerfect 5.1+ for DOS† will give you 6.0 file compatibility and new features like fax and e-mail support. It gives you high performance

The Perfect Time
to Upgrade Promotion.
Ends August 31st.
(800) 526-5163

best-selling word
ever. At upgrade prices
won't last forever.

ct®

with low system requirements. There's also new WordPerfect 6.0 for DOS, with advanced desktop publishing and spreadsheet features, plus the option to use a graphical interface. And if you're moving to Windows,™ there's no easier way to make the transition easier than with WordPerfect 6.0 for Windows. It's the world's first document processor integrating text, data and graphics in one easy-to-use program.

Of course, each upgrade comes with the best toll-free support in the industry. So look for our display at participating dealers, or call us today. Because at these prices, there may never be a more perfect time to upgrade.

*PRICES LISTED ARE DIRECT PRICES FROM WORDPERFECT CORPORATION—RESELLER PRICES MAY VARY. PRICE DOES NOT INCLUDE TAX, SHIPPING AND HANDLING. OFFER GOOD IN THE UNITED STATES ONLY. OFFER EXPIRES AUGUST 31, 1994 †WORDPERFECT 5.1+ FOR DOS ALSO INCLUDES SPECIAL EDITIONS OF STAIRWAY SOFTWARE'S SCREENEXTENDER™ AND BITSTREAM FACELIFT™ SOFTWARE. $49.95 PRICE IS FOR CURRENT WORDPERFECT USERS. COMPETITIVE UPGRADE $99. WORDPERFECT IS A REGISTERED TRADEMARK OF WORDPERFECT CORPORATION. ALL OTHER TRADEMARKS ARE PROPERTY OF THEIR HOLDERS. ©1994 WORDPERFECT CORPORATION. ALL RIGHTS RESERVED.

A New Face for dBASE

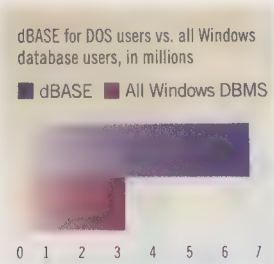
SYNOPSIS

END-USER MAKEOVER: *A friendlier face to a familiar program.* **154**

DEVELOPER DUTY: *Object-oriented tools with backward compatibility.* **155**

USABILITY DATA: *Lack of consistency frustrates users.* **156**

FINAL ANALYSIS: *Gaps for users, great for developers.* **157**



The Case for dBASE: Even if only half of its users upgrade, dBASE would still dominate the Windows DBMS market.

Can the ugly duckling of character-based applications finally grow into a graceful swan under Windows? To find out, we looked at a beta version of Borland's dBASE for Windows. If you're an xBASE developer with Windows on your agenda, you'll want dBASE for Windows. The new version is not just another pretty interface. This release aims to cater to both developers and end users by adding intuitive end-user tools, revamping the xBASE language, and maintaining backward compatibility with the millions of lines of code you've got on your PC. Its powerful object-oriented development tools, uniquely combined with its database engine, knocked our socks off. We weren't as thrilled by the inconsistent and limited tools for end users, however.

The new version will arrive this summer (Borland is shooting for June but won't commit to an exact date), and not a moment too soon. Announced by the late Ashton-Tate in 1991, it may be the longest awaited application release in history. But show some respect—this new version was rebuilt from the ground up, and it's the only application widely used today that debuted as an 8-bit CP/M program back when Jimmy Carter was president.

It's not only survived, it's dominated the DOS database market with 6.7 million users. Even though dBASE IV 1.0 first shipped almost six years ago, users still buy thousands of copies of dBASE III Plus every year because it can run on an 8086 processor with 512K of memory. But some 800,000 users (DOS and Windows combined) have chosen Microsoft's FoxPro for its attractive dBASE compatibility through the standard xBASE development language. Of those users, 300,000 have chosen FoxPro 2.5 for Windows.

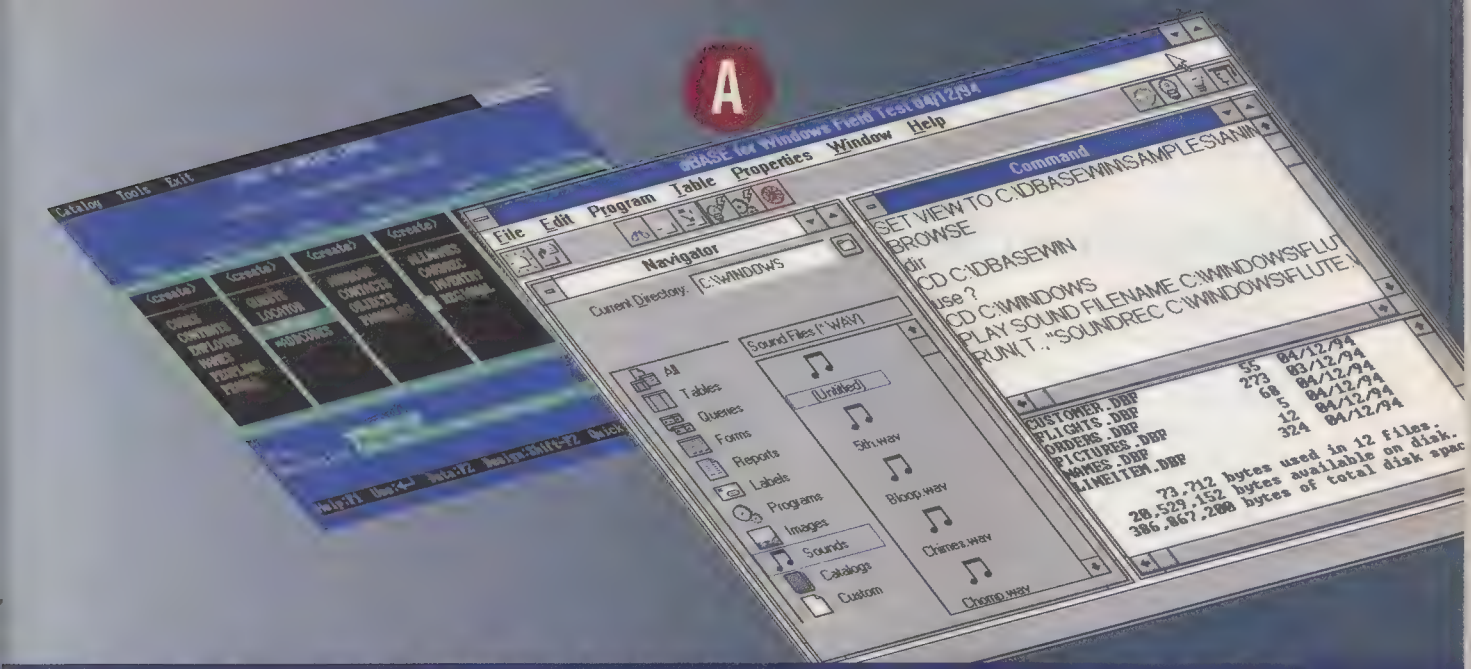
Is this your D day for dBASE? Here's how to decide.

BY YAEL LI-RON

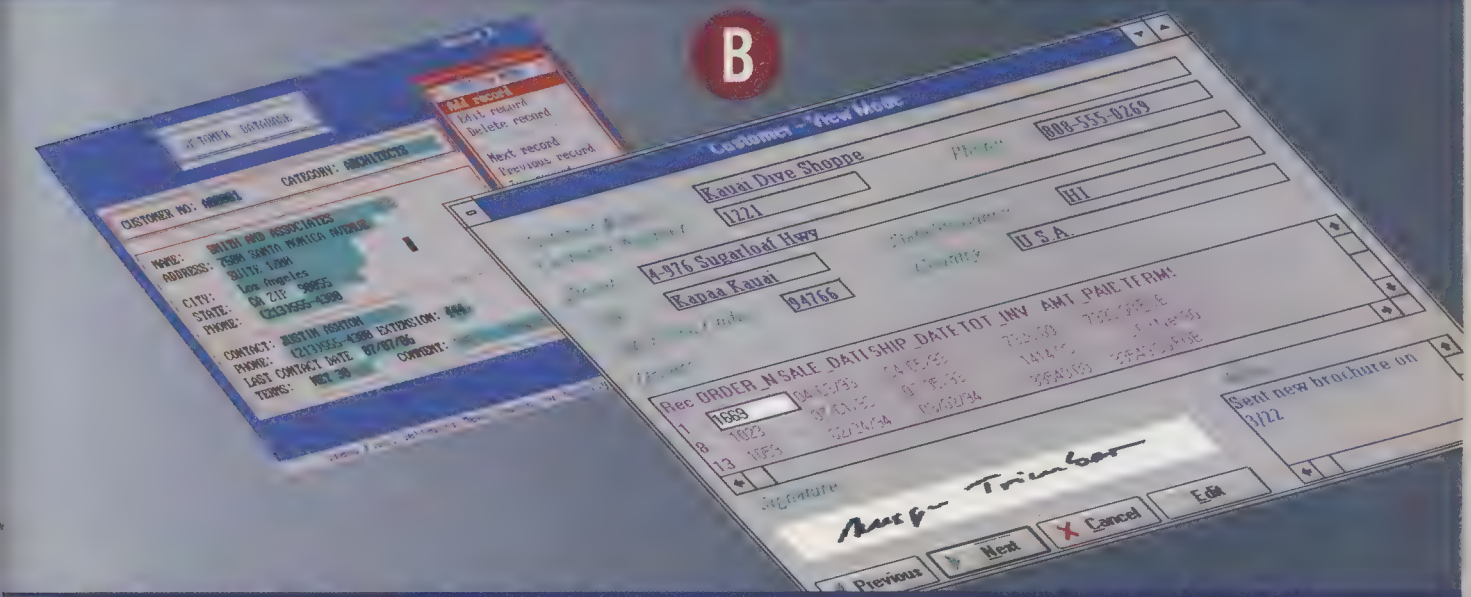
A CONTROL CENTER VS. NAVIGATOR: The new Navigator puts most operations within reach, replacing the old character-based Control Center.

B FORMS: A new designer lets you insert graphics such as signatures, and even spreadsheet-like objects such as order tables.

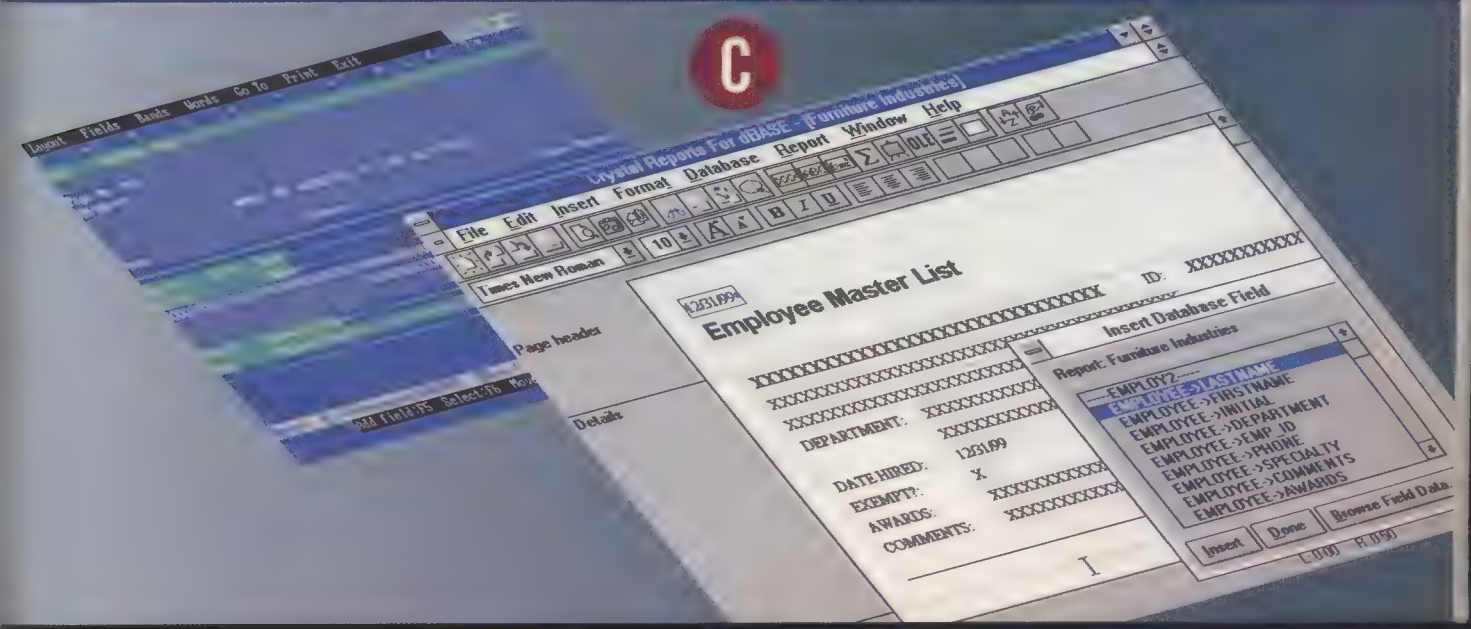
C REPORT GENERATOR: From total drag to drag-and-drop: Crystal Reports lets you insert specific data like employee info into sharp reports.



Years in the making, dBASE is backed by a time-tested **database engine.**



Design tools in Windows build snappy forms the DOS version can't match.



Wanted: Expert Advice

In its utilitarian homeliness, the DOS version of dBASE reveals its CP/M legacy. While the icons, pull-down menus, and drag-and-drop operations of the long-anticipated Windows version are a vast improvement, they take users only halfway to truly intuitive work.

dBASE for Windows doesn't resemble character-based dBASE, and that's its strongest asset for end users. The main work screen, called the Navigator, puts all the necessary tools at your fingertips. You can create new tables, forms, queries, and reports with a few mouse clicks.

On the downside, we were disappointed that this release included only one Expert—an interactive design shortcut for users. At a time when Experts and Wizards rule the day (in comparison, FoxPro has 12), we were disappointed to find just one—for creating forms—in dBASE. Where are the counterparts for reports and queries? Borland will say only that it intends to incorporate more Experts in the next version, but the company won't reveal how many or when we can expect the update. Our guess: A revision to run on Windows 4.0 will appear sometime late next year.

We want more because dBASE's Form Expert is so good. You can create professional-looking data entry screens with just a few keystrokes, and then proceed to modify the design to your heart's content by dragging and resizing objects onscreen. The truly daring can further experiment with custom control buttons, such as OK or Cancel buttons, usually intended for developers.

Crystal Reports, a report generator from Crystal Computer Services, is integrated seamlessly into dBASE. It uses a banded approach (designating data as headline or text and also designating where it fits on the page) similar to dBASE IV, Microsoft's Access, and Borland's own Paradox. In our usability tests, the report generator confused users, making us hunger for the quick-click capability of an Expert design module (see "How Intuitive Is dBASE Now?" page 156).

GUIDED TOUR THE NEW dBASE INTERFACE ADDS BEAUTY BUT NOT CONSISTENCY

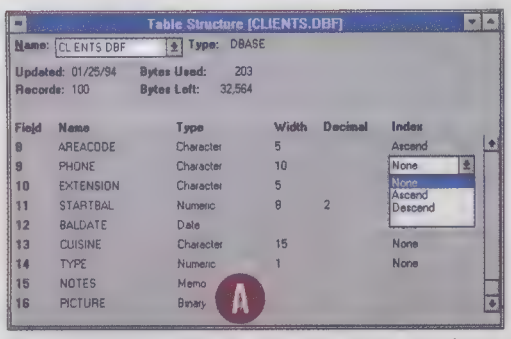
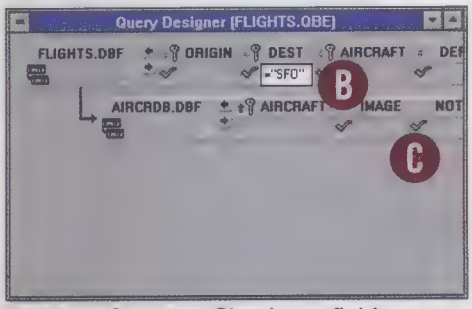
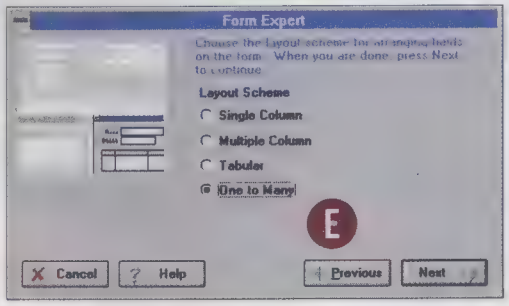


Table Setting: Click on Type or Index and a drop-down menu displays available options. To access this screen from the Navigator, double-click on the right-mouse button. Users had no problem creating or modifying tables.



Quicker Queries: Check any field you want to display in the query, then drag and drop to establish links. dBASE guessed the key field for this link (AIRCRAFT) because it was the only field that was common to both the "flights" and the "aircraft" databases.

Reporting In: The report generator is also the label and cross-tab designer. Use data from your Data File (DBF table), or even from a SQL table. The software offers access to client-server databases.



Forms Factor: We had a taste of this Expert and we want more! Unfortunately, this interactive designer is the only one in this release. However, dBASE for Windows will have 13 online interactive tutors, which will help users with the basics.

A. A **binary field** may contain a WAV file or a graphic. DDE is another new field type.

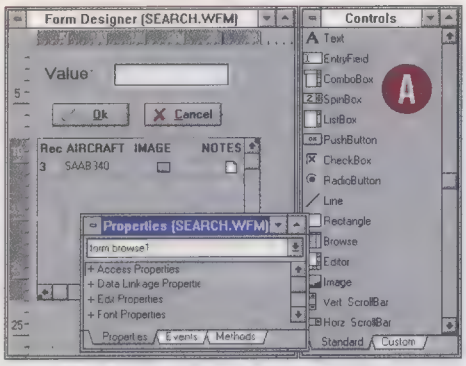
B. Another problem raised in the Usability Labs—**quotation marks** must be placed around character fields or your query won't work.

C. To include all the fields in the **query**, check the box under the table's name. Otherwise, check them one by one. Though it may sound obvious, most of our usability testers had a hard time with this.

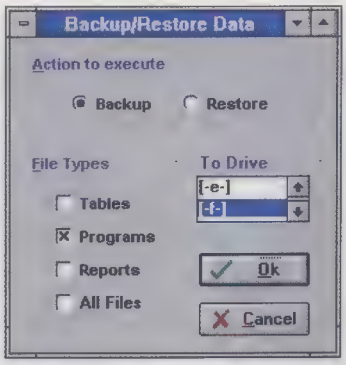
D. The **Data Dictionary** extends a table's structure with additional default values, so that a particular field will automatically contain predetermined information. This makes data entry more efficient.

E. For point of sale or similar applications, use **One to Many** to place a browse box inside your form.

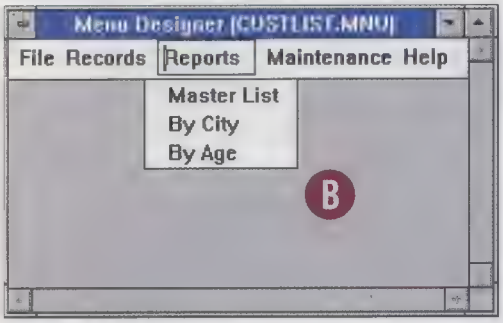
GUIDED TOUR LESS CODING, **MORE OBJECTS**—AND THE DEVELOPERS GO WILD



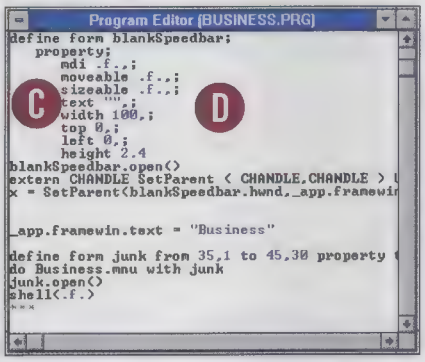
Custom Control Freaks: Pick a button, any button, and add it to your form or create a custom control. Even access third-party VBXs to use as native dBASE controls.



Menu or Form? When asked to create a menu (such as a back-up application), developers in our usability tests assumed they needed to create a form.



Zip Code: How many lines of code did it take to create this menu? Zero. Zilch. Nada. The Menu Designer is a slick tool, and it generates standard dBASE code. The bad news is that there's no compiler yet.



The dBASE You Know: Familiarity and object-oriented capabilities make it worth upgrading to the Windows version. With the dBASE engine, the object programming is unbeatable.

A. Buttonhooks galore. Insert radio buttons, check boxes, browse boxes, and more. It's as easy as clicking on the **Controls menu.**

B. Thirty-second menu creation. Type CREATE MENU [*menu name*] and start typing bar after bar. To move sideways, press Tab. Create submenus just as easily.

C. Convenient **color coding** comes courtesy of the Borland language group. Because you can quickly scan the code for anomalies, it makes debugging much simpler.

D. Actual work begins when you need to attach actions to each menu bar at the source-code level. The **new object-oriented extensions** to the dBASE language require a somewhat steep learning curve, but once you master them, you'll wonder how you ever programmed without them.

Objects of Desire

dBASE developers are a persnickety bunch. "Give me a dot prompt," they tell you, "and I'll be fine. Who needs cute icons when I can type deliciously cryptic commands in a text editor?" If this sounds like you, prepare to be surprised. Sure, you can still hack away happily in dBASE for Windows, but you'll be sorry if you don't take advantage of the built-in GUI tools that manage the mundane work for you. The bad news: A compiler, crucial for any application distribution, isn't scheduled to ship until six months after this version is released.

In dBASE for Windows, Borland is for the first time combining object-oriented programming with a built-in database engine. The application won't hold that unique position for long—though Microsoft won't confirm, the next version of FoxPro is planned to be object-oriented as well. Similarly, Computer Associates plans to release an object-oriented database called CA-Visual Objects later this summer, providing backward compatibility for Clipper developers. Borland has maintained the standard dBASE language while incorporating objects. The resulting program smoothly ushers any reluctant developers into high-level languages like C++. The learning curve may be a bit steep, but once you see the power and versatility that's available, you'll be hooked.

To get you started, dBASE for Windows features what Borland calls "two-way tools." These are design modules that automatically generate dBASE code. They now have a two-way capability that changes the interface when you modify the source code. When you display a menu you've created in Borland's traditional design surface, the interface reflects any changes made to the source code. This dynamic operation may turn out to be your best learning tool.

We like the versatility it gives developers, too. You can utilize external VBXs—custom controls for Visual Basic applications—as native controls, in addition to custom controls you create with the dBASE language itself. For easy migration, the Component Builder converts dBASE III Plus and dBASE IV code (in FMT, FRM, and LBL formats) to object code. There's a powerful visual debugger and a preprocessor directive, courtesy of the Borland language group. Data dictionaries, popular on many DBMS design platforms, have also been added. DDE and OLE 1.0 are also supported. A new binary field type lets you embed DDE objects such as bitmap images and WAV files. Overall, there's lots of power here to tempt the dBASE developer with an eye on the future.

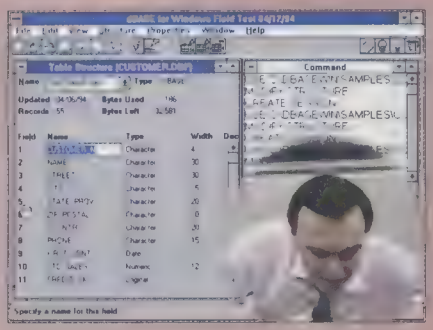
PC USABILITY Tested

How Intuitive Is dBASE Now?

Not completely. Users were frequently frustrated with the beta version—even with icons and pull-down menus. For instance, none of them understood that to create a new icon they needed to click on the **Untitled** box on the Navigator screen. How about labeling it "**Create**"?

Want to **add data** to a file? If there are already records in the file and you double-click on the table's icon, it will open. If there are no records, the icon won't open. We wished for **consistency**. Borland acknowledged these issues, but doesn't plan changes in this release.

Lab Notes: What Our Testers Said about dBASE for Windows

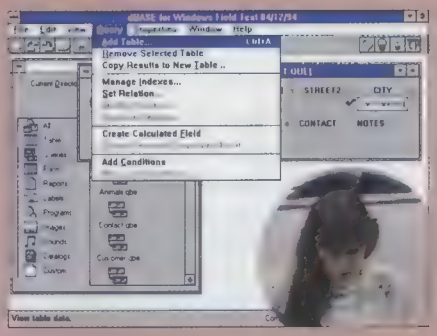


"Hey, I got a hand here. Probably means I can move the field somewhere. Let me see. What do you know, it works!"
DBASE DEVELOPER

"Anytime you create a new item, you should be asked if you want to put that item in a catalog."
SYSTEMS ANALYST

"They should have put an icon here somewhere with a whole list of functions, like date, that I can select."
SENIOR SOFTWARE ENGINEER

"I'm trying to get it to query. Nope. That won't do. Where's that thing?! How can you view the data?"
CAD OPERATOR



How We Tested: dBASE for Windows

To evaluate the new version of dBASE, we brought end users and developers of varying backgrounds and levels of experience into our Usability Labs. Some were very proficient in dBASE and in the dBASE language. Others had experience with other databases such as Microsoft Access, Borland's own Paradox, or Symantec Q&A. Most were comfortable with the Windows environment, while some couldn't even navigate the Help system.

We urged our testers to "think out loud." Some of their "thoughts" appear at left in quotes. We also encouraged them to refer to manuals and online help as much as possible—though not all help files were available in the beta release, and the documentation was in a very preliminary stage.

Each user was given the same assignment:

- Create a table
- Modify the table's structure
- Look up specific records
- Create a report
- Create a catalog

Developers were also asked to create a simple menu.

WORK COMPLETED: *All users created and modified tables easily, but creating queries and reports caused some stumbles.*

STRUGGLES: *Both the Query Designer and the report generator, touted as user-friendly, stumped some testers.*

SATISFACTION: *Developers found dBASE easier than end users did, though the developers used Windows features less.*

PRODUCTIVITY: *This was difficult to quantify because beta documentation (printed and online) was incomplete.*

VERDICT: *Overall, dBASE for Windows is worth the wait, but it does need more expert help for end users.*

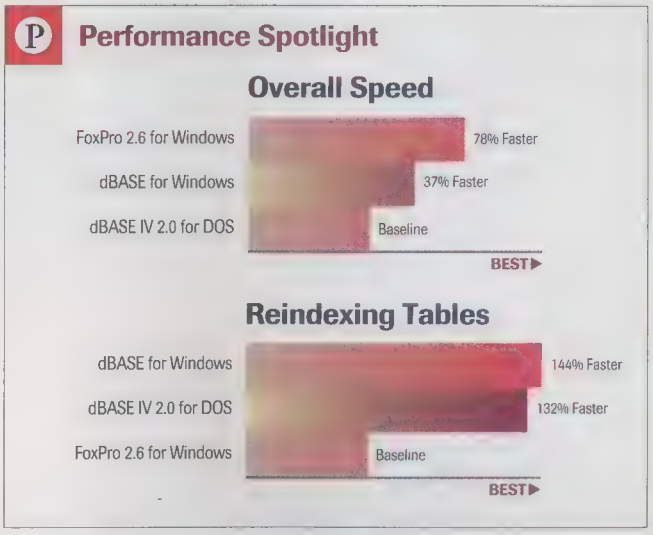
Foxpro 2.6: The One to Beat

FoxPro for Windows is going after the same market Borland hopes to capture: Windows xBASE developers. The difference is that in 18 months FoxPro for Windows has already carved a significant niche, and its followers' ranks are growing. Offering complete dBASE compatibility plus many enhancements— including the proven Rushmore technology for speeding up queries—it's been an appealing option for developers who couldn't wait for Borland's dBASE for Windows. FoxPro 2.6 for Windows (a DOS version is also available) does not offer object-oriented tools, but that's its only drawback—one that's rumored to be corrected sometime this year in Version 3.0. Even so, FoxPro is a solid, time-tested development environment.

New in Version 2.6 for Windows, which was released earlier this year: an AutoMigrate tool for converting dBASE catalogs, reports, forms, tables, and queries; 50 dBASE language extensions; 200 new commands, and 12 Wizards (the counterparts to Borland's Expert concept). There's a powerful menu builder to minimize coding time. SQL access is done through ODBC (dBASE uses IDAPI). There's even a client-server Wizard, dispelling the notion that Wizards are for beginners only. The Professional Edition includes a client-server connectivity kit, a library construction kit (for linking C routines to your FoxPro program), and a distribution kit.

Naysayers claim that FoxPro's functionality is limited because it was ported to Windows, unlike the new version of dBASE, which was rewritten from the ground up. Nonetheless, for the past 18 months FoxPro has been the only Windows game in town, and in the real world, being produced beats being promised.

FoxPro 2.6 for Windows / $495; Developers' Edition, $695 / Microsoft / (800) 426-9400 / (206) 882-8080 / *Circle Reader Service No. 695*



Mixed Results: We used ProCD's Select Phone database of 75,000 records. FoxPro outpaces dBASE in overall performance, but not in reindexing. (Remember, though, we tested a beta version against two mature products.)

Final Analysis: Is This the Upgrade You've Been Waiting For?

1. The **object-oriented development** environment works with a powerful database engine.
2. End users need more **Experts** and **interface consistency** to avoid confusion and frustration.
3. dBASE provides a path to Windows with **backward compatibility** to thousands of applications.

Deciding on dBASE If you're thinking about upgrading to dBASE for Windows, it's no easy decision. If you've been taking advantage of dBASE's low PC processing requirements, you'll need a major hardware upgrade to take advantage of the Windows version. Borland recommends using at least a 386-based PC with 4MB of RAM (we recommend at least 8MB). As for the software cost, Borland has not yet revealed the list price or upgrade price.

Developers will love dBASE for Windows' robust object-oriented capabilities, backward compatibility to hordes of applications, and powerful database engine. Throw in SQL access, and you make the client-server folks very happy.

Experts Needed We're not as confident about users' reactions, however, based on our concerns with the user interface and limited number of Experts. Borland acknowledges these shortcomings, and we'll reserve judgment until we see the shipping version.

Nonetheless, hundreds of thousands of dBASE programs are in active use, and they're in need of ongoing maintenance. Most importantly, many of them are DOS applications running on Windows machines, just begging to be upgraded.

Emotional Baggage To some, dBASE still carries the baggage of buggy releases and broken promises from its Ashton-Tate days. On the other hand, Borland has its fans. Terrance A. Crow, an independent dBASE developer, says, "I'll stick with dBASE because I like Borland's corporate philosophy—they're concerned more with customer satisfaction than with market dominance."

For dBASE developers, the new version is a natural choice for the "check this out" list. It lets them move to object-oriented programming while maintaining compatibility with current programs. Until Microsoft and Computer Associates add similar capabilities to their products later this year, Borland is the only company leading xBASE developers into this new, exciting territory.

dBASE for Windows / Price Not Determined / Borland Int'l / (800) 336-6464 ext. 1203 / (408) 431-1000 / *Circle Reader Service No. 696*

Funny how it's the little things that attract people to a particular small business server.

Then again, maybe this is a big thing.

Introducing the IBM PC Server, for small business.

486DX 66 MHz
or Pentium® 60 MHz
▪
Upgradeable
▪
30-day money-back guarantee
▪
*3-year on-site warranty**
▪
Tested to exacting IBM standards
▪
Industry standard architecture
▪
*Starting under $3,000***

You're about to place your entire business in a box no bigger than a suitcase. That's enough to make anyone pace the floor.

Fortunately for the life of your carpet, IBM now makes a server for small local networks.

This means, of course, that the kind of performance and reliability IBM is famous for, and the kind of support we're famous for (24 hours a day, 7 days a week, 365 days a year†) are now available to you, too.

All at the kind of price (we confess) IBM is not so famous for. A remarkably competitive price, whether you need to network five people or fifty.

And because the IBM PC Server is easily upgradeable, and happily works with most anyone's peripherals, it lets you create the perfect, total business solution.

For more details, talk to your favorite reseller, or, if you need a favorite reseller, just call us at the Personal Systems HelpCenter® at 1 800 772-2227.‡ For information via FAX, call 1 800 IBM-4FAX and ask for document 3078.

IBM®

**Copies of IBM's statement of limited warranty are available upon request. **Dealer prices may vary. †Via telephone from the Personal Systems HelpCenter. ‡In Canada, call 1 800 465-7999. IBM and HelpCenter are registered trademarks of the International Business Machines Corporation. All other trademarks and registered trademarks are the property of their respective holders. © 1994 IBM Corp.*

Selection, Service, and Price When You Buy Direct

Direct 60

BEST SOURCES

CD-ROMs: *Competitive CD-ROM prices available at EPS Technologies.* **166**

SOFTWARE: *Dustin delivers low prices on software.* **166**

PERIPHERALS: *MidWest Micro delivers selection and strong service.* **171**

NOTEBOOKS: *Notebook buyers head for PCs Compleat.* **174**

SYSTEMS: *Top-selling merchandise for high-ranked Zeos International.* **178**

Why buy direct? It's faster, cheaper, easier, and offers better selection than other computer sales channels. How does it work? You can pick up the phone—day, night, or weekend—dial a toll-free number, and talk with someone who can usually offer darned good advice about your purchase. Take advantage of a little leeway on negotiating the price, service contract, or delivery, and then whip out your credit card. Sit back. Your new system—or must-have software, printer, what have you—is on its way. And you didn't have to leave your office!

Of course, you may run into problems. Ever called a direct company only to get put on hold so long you could finish reading *Paradise Lost?* Or been shipped the wrong product and then told you have to pay the postage to return it? That's when you need *PC Computing*. Never fear. The Direct 60 is here.

The 60 companies on our list exemplify the best that direct buying has to offer. There are other good companies out there, but in the opinions of our experts, these companies lead the pack in selection, service, price, and/or overall reputation (see "How We Chose the Direct 60," page 178). Specifically, we rated the Direct 60's sales and service policies, their guarantees and warranties, and their overall excellence. Want incredible selection on the latest CD-ROM titles? Call EPS Technologies. How about the best tech support—any time of day or night? Call AT&T Direct, DECdirect, or Zeos and get competitive pricing, too.

Direct companies are in a competitive business; hard times have forced many to close their doors in the last four years. The survivors have proved their staying power.

Direct Order Tips

1. **RESEARCH:** Ask associates, friends, and salespeople about the product you want. Read performance reviews. Check out prices in ads.
2. **COMPARE:** Get final quotes from three sources. Tell them you're shopping around.
3. **NEGOTIATE:** Everything's negotiable. Lobby for a deal on price, an extended warranty, extra software, or overnight delivery.

Company	Hours	Guarantees	Warranties	Sales/Service Rating	Guarantee/Warranty Rating	Overall Rating/Comments
Acer Direct (800) 368-2237 Fax: (408) 922-2953 Phone tech support: (800) 445-6495 Founded: 1993 *Reader Service No. 700*	Sales: Mon.-Fri. 6 a.m.-6 p.m., Sat. 8 a.m.-4 p.m. (PST). Phone, online, and fax support: 24 hours. Prodigy, CompuServe, BBS: 24 hours.	30-day money back.	1 year parts and labor, onsite service, and overnight replacement of notebooks only.	4.5	3.5	★★★★ **Acer goes direct** with quality systems and outstanding support.
Advanced Logic Research (800) 444-4257 Fax: (714) 581-9240 Phone tech support: (800) 257-1230 Founded: 1984 *Reader Service No. 701*	Sales: Mon.-Fri. 8 a.m.-5 p.m. (PST). Phone support: Mon.-Fri. 6 a.m.-6 p.m., Sat. 7 a.m.-1 p.m. Online and fax support: 24 hours. CompuServe, BBS: 24 hours.	30-day money back, 15% restocking fee for returns.	5 years parts and labor on system components, 15 months on peripheral parts, 1 year onsite service.	3	4	★★★½ **Extended warranties** and great prices on its line of high-performance PCs make ALR a fierce competitor.
Ambra Computer (800) 252-6272 Fax: (602) 858-2632 Phone tech support: (800) 465-2227 Founded: 1993 *Reader Service No. 702*	Sales: Mon.-Fri. 8 a.m.-11 p.m., Sat.-Sun. 10 a.m.-7 p.m. (EST). Phone support: 24 hours.	30-day money back.	1 year parts and labor off-site, lifetime tech support. Overnight replacement.	3	3.5	★★★½ **One of two** separate divisions with Big Blue backing. Smart pricing and steadfast tech support.
Ares Microdevelopment (800) 322-3200 Fax: (810) 473-4450 Phone tech support: (800) 322-3200 Founded: 1990 *Reader Service No. 703*	Sales: Mon.-Fri. 8 a.m.-11 p.m., Sat. 9 a.m.-6 p.m., Sun. 10 a.m.-4 p.m. (EST). Phone and fax support: 24 hours. Online support: Mon.-Fri. 9 a.m.-6 p.m.	60-day money back.	2 years parts and labor, 1 year onsite service, lifetime tech support. All postage paid for 60 days for returns, exchanges, and replacements.	2.5	4	★★★½ **Proven quality,** reliable support and service, and gutsy price points.
Arlington Computer Products (800) 548-5105 Fax: (708) 228-0516 Phone tech support: (708) 228-1470 Founded: 1984 *Reader Service No. 704*	Sales: Mon.-Sat. 7:30 a.m.-8:30 p.m. (CST). Phone support: Mon.-Fri. 8:30 a.m.-5 p.m.	10% restocking fee for returns.	Manufacturer's warranty; 1 year onsite service offered by Canon Computer Systems for its equipment.	2	2	★★ **A 10-year** track record of consistent service.
AT&T Direct (800) 639-2600 Fax: (513) 445-5667 Phone tech support: (800) 531-2222 Founded: 1989 *Reader Service No. 705*	Sales: Mon.-Sat. 8 a.m.-8 p.m. (EST). Phone, online, and fax support: 24 hours.	30-day money back.	3 years onsite parts and labor. One-way postage paid for replacements, damaged returns, and exchanges.	4.5	5	★★★★★ **This high-scoring** relative newcomer is making its mark.
Austin Direct (800) 752-1577 Fax: (512) 454-1357 Phone tech support: (800) 752-4171 Founded: 1984 *Reader Service No. 706*	Sales: Mon.-Fri. 8 a.m.-6 p.m. (CST). Phone, online, and fax support: 7 days, 6 a.m.-midnight.	30-day money back.	2 years parts and labor, 1 year onsite service, 2 years overnight repair or replacement.	3	3.5	★★★½ **Quality computers** and noteworthy selection.

SYSTEMS PERIPHERALS CD-ROMs NOTEBOOKS SOFTWARE

★★★★★ INCREDIBLE ★★★★ GREAT ★★★ GOOD ★★ RELIABLE ★ SATISFACTORY

Direct 60 Best Sources for Selection, Service, and Price

Company	Hours	Guarantees	Warranties	Sales/Service Rating	Guarantee/Warranty Rating	Overall Rating/Comments
Cables To Go (800) 826-7904 Fax: (800) 331-2841 Phone tech support: (800) 826-7904 Founded: 1984 *Reader Service No. 707*	Sales: Mon.-Thu. 8:30 a.m.-7 p.m., Fri. 8:30-6 p.m. (EST). Phone support: Mon.-Thu. 8:30 a.m.-7 p.m., Fri. 8:30 a.m.-6 p.m.	30-day money back, 15% restock fee for some returns. 1 year on defects for all except cables.	Manufacturer's warranty plus 1-year guarantee against defects and labor for cables.	2.5	5	★★★★ **A focused niche** with ample product selection. BEST-SELLER: 6-foot IBM-compatible printer cable $6.95
CAD Warehouse (800) 487-0485 Fax: (216) 487-0553 Phone tech support: (216) 487-0631 Founded: 1991 *Reader Service No. 708*	Sales: Mon.-Fri. 9 a.m.-6 p.m. (EST). Phone and fax support: Mon.-Fri. 9 a.m.-5:30 p.m.	15% discretionary restocking fee for returns.	Manufacturer's warranty.	2	3	★★½ **CAD expertise** shows. BEST-SELLER: CalComp Drawing Board III $245
Compaq DirectPlus (800) 888-5881 Fax: (713) 374-4025 Phone tech support: (800) 345-1518 Founded: 1982 *Reader Service No. 709*	Sales: Mon.-Fri. 7 a.m.-6 p.m. (CST). Phone, online, and fax support: 24 hours.	30-day money back.	1 year onsite parts and labor, 2 years offsite parts and labor for most products. Postage paid on items returned for repairs.	4	3	★★★½ **Re-energized** company discovers the direct channel to deliver Compaq quality at mail-order prices. BEST-SELLER: 4/33SX ProLinea Productivity Paq $1,649
CompuAdd Computer (800) 627-1961; (512) 250-1489 Fax: (512) 331-2862 Phone tech support: (800) 999-9901 Founded: 1982 *Reader Service No. 710*	Sales: Mon.-Fri. 7 a.m.-7 p.m. (CST). Phone support: Mon.-Fri. 7 a.m.-10 p.m. Online and fax support: Mon.-Fri. 7 a.m.-5 p.m. BBS: 24 hours.	30-day money back.	1 year onsite parts and labor (return postage paid), and 24- to 48-hour replacement (postage paid both ways), lifetime tech support.	4	4	★★★★ **This OEM** ranks high on service and selection, and fulfills its motto "Satisfaction guaranteed." BEST-SELLER: C466D Desktop $2,195
CompuClassics (800) 733-3888 Fax: (818) 734-3999 Founded: 1984 *Reader Service No. 711*	Sales: Mon.-Fri. 7 a.m.-6 p.m., Sat. 9 a.m.-2 p.m. (PST).	15% discretionary restocking fee for returns.	Manufacturer's warranty.	1	3	★★ **Fast, friendly** service with a healthy pick of products. BEST-SELLER: Microsoft Office 4.2 upgrade $285
CompUSA-Direct (800) 266-7872 Fax: (214) 888-5743 Phone tech support: (800) 382-8324 Founded: 1986 *Reader Service No. 712*	Sales: 24 hours. Phone support: Mon.-Fri. 7 a.m.-9 p.m. (CST). Online support: Mon.-Fri. 8 a.m.-8 p.m.	30-day money back, except on certain software. No refunds after 30 days unless defective.	1 year onsite parts, labor, overnight replacement. Postage paid on overnight replacements and defective returns.	4	2.5	★★★½ **The warehouse** wonder has a direct side, too. Keep your eye on this one! BEST-SELLER: Toshiba 1910 notebook $1,399
ComputAbility Consumer Electronics (800) 558-0003 Fax: (414) 357-7814 Phone tech support: (800) 558-0003 Founded: 1982 *Reader Service No. 713*	Sales: Mon.-Fri. 8 a.m.-8 p.m., Sat. 9 a.m.-5 p.m. (CST). Phone support: Mon.-Fri. 1 p.m.-5 p.m. Fax support: Mon.-Fri. 9 a.m.-5 p.m.	30-day exchange for defective items, 5% restocking fee for refunds.	Manufacturer's warranty. Postage paid for exchange of defective items.	2.5	2	★★½ **A dozen years** have honed its dedication to variety and price sensitivity. BEST-SELLER: NEC 3Xi CD-ROM drive $423

SYSTEMS PERIPHERALS CD-ROMs NOTEBOOKS SOFTWARE

★★★★★ INCREDIBLE ★★★★½ GREAT ★★★ GOOD ★★ RELIABLE ★ SATISFACTORY

The Quickest Way for the CD-ROM Revolution to Pick up Speed.

Introducing the 4PleX Quad Speed CD-ROM Drive with a 1MB Buffer.

If you've been waiting for CD-ROM drive performance to really take off, get ready to hold on tight. The new Plextor 4PleX leaps past the capabilities of 2X and 3X drives, and puts you in the forefront of the multimedia revolution. The fastest (600KB/sec) data transfer rate yet seen will whiz multimedia video, graphics and animation across your screen, providing you with realism and excitement that slower CD-ROM drives can't match.

4PleX quad speed drives are available in both internal (standard half-height size for easy mounting in your PC) and external configurations. Both models feature a massive 1MB buffer, the largest ever found on a CD-ROM drive. They connect to your system through a SCSI-2 interface, which offers tremendous performance advantages over the IDE- and ATAPI-interfaces used by many competing drives. 4PleX drives surpass MPC-2 specifications, and are XA and Kodak Photo CD multisession compatible.

Plextor drives are designed for maximum performance and minimum downtime. They are built at an ISO 9002-approved factory in Japan, boast an industry-leading 70,000 MTBF (15% duty), and are covered by a two-year warranty. If you encounter any difficulty installing or operating a 4PleX drive, call our toll-free technical support line, where real people with real answers (CD-ROM is all they do!) will assist you.

Why wait? Join the multimedia revolution with a revolutionary 4PleX CD-ROM drive. Call toll-free 800-4PLEXTOR (800-475-3986) for more information and the name of a dealer near you.

Ask for a free copy of our brochure, "15 Questions To Ask Before Purchasing A CD-ROM Drive"

PLEXTOR

4255 Burton Drive
Santa Clara, CA 95054
Tel: 408-980-1838 or
Tel: 800-4PLEXTOR
Fax: 408-986-1010

©1994, Plextor Corp. All Rights Reserved. 4PleX is a registered trademark of Plextor Corp. All other trademarks or registered trademarks specified are owned by their respective holders.

Circle 266 on reader service card.

Direct 60 Best Sources for Selection, Service, and Price

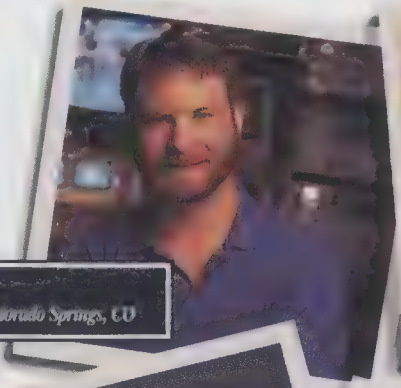
Company	Hours	Guarantees	Warranties	Sales/Service Rating	Guarantee/Warranty Rating	Overall Rating/Comments
Computer Discount Warehouse (800) 800-4239 Fax: (708) 465-6800 Phone tech support: (800) 383-4239 Founded: 1983 *Reader Service No. 714*	Sales: Mon.-Fri. 7 a.m.-9 p.m., Sat. 9 a.m.-5 p.m. (CST). Phone support: Mon.-Fri. 8 a.m.-9 p.m., Sat. 9 a.m.-5 p.m.	30-day money back, variable restocking fee for items returned incomplete.	Onsite parts and labor, some overnight replacement. Pays overnight postage on replacements, defect returns, some exchanges.	2.5	4.5	★★★½ BEST-SELLER: U.S. Robotics Sportster 14.4 external modem w/fax $139.50 **Simple and true:** great prices, great selection.
Computerware Direct (800) 988-7770 Fax: (215) 788-6589 Phone tech support: (215) 788-3939 Founded: 1982 *Reader Service No. 715*	Sales: Mon.-Fri. 8:30 a.m.-5 p.m. (EST). Phone, online, and fax support: Mon.-Fri. 8:30 a.m.-5 p.m.	7-day money back, variable restocking fee for returned special orders.	Manufacturer's warranty. Postage paid for returns, replacements, and exchanges.	3	3	★★★ BEST-SELLER: Hewlett-Packard InkJet 520 $285 **This well-trained** sales team will work hard to accommodate a customer.
Comtrade (800) 969-2123 Fax: (818) 369-1479 Phone tech support: (800) 899-4508 Founded: 1987 *Reader Service No. 716*	Sales: Mon.-Fri. 7 a.m.-7 p.m., Sat. 9 a.m.-6 p.m. (PST). Phone support: Mon.-Fri. 7 a.m.-7 p.m.	30-day money back.	3 years parts and labor, 1 year onsite service, 30 days overnight replacement.	1.5	2.5	★½ BEST-SELLER: VL-Bus BestBuy 66MHz 486 $1,695 **Powerful products** put this small company in the big leagues.
Cornell Computer Systems (800) 886-7200 Fax: (909) 594-9995 Phone tech support: (800) 886-7279 Founded: 1991 *Reader Service No. 717*	Sales: Mon.-Sat. 7 a.m.-7 p.m. (PST). Phone support: Mon.-Sat. 8 a.m.-6 p.m. Online support: 24 hours.	30-day money back.	3 years parts and labor, 3 years overnight replacement, 1 year onsite service.	4	3	★★★½ BEST-SELLER: 66MHz 486DX2 Power Pak $2,695 **Solid systems** at make-the-sale prices.
DECdirect (Digital Equipment Corp.) (800) 344-4825 Fax: (800) 234-2298 Phone tech support: (800) 344-4825 Founded: 1976 *Reader Service No. 718*	Sales: 24 hours. Phone, online and fax support: 24 hours.	Unlimited money back.	3 years parts and labor, 1 year onsite service, immediate pick-up and 2-day repair/replacement (notebooks only).	5	4	★★★★½ BEST-SELLER: DECpc LPv 4/33DX $1,399 without monitor **Big iron** with long direct track record goes PC. A heck of a support network and huge field service staff.
Dell Computer Corp. (800) 289-3355 Fax: (512) 728-3653 Phone tech support: (800) 624-9896 Founded: 1984 *Reader Service No. 719*	Sales: Mon.-Fri. 7 a.m.-9 p.m., Sat. 9 a.m.-3 p.m., Sun. 10 a.m.-2 p.m. (CST). Phone and fax support: 24 hours. Online support: during business hours. BBS: 24 hours.	30-day money back, 5-minute tech support response.	Parts and labor, onsite service, overnight replacement (length varies depending on system).	4	5	★★★★½ BEST-SELLER: Dell Dimension XPS P60 $2,599 **Best and brightest** sets the standard. One-stop shopping is a bonus. Tech support guarantee.
Dirt Cheap Drives (800) 473-0960 Fax: (713) 333-2033 Phone tech support: (713) 333-2099 Founded: 1988 *Reader Service No. 720*	Sales: Mon.-Fri. 8 a.m.-7 p.m., Sat. 9 a.m.-3 p.m. (CST). Phone support: Mon.-Fri. 9 a.m.-6 p.m. Fax support: 24 hours.	30-day money back, 15% restocking fee for returns.	Manufacturer's warranty.	2	3	★★½ BEST-SELLER: Maxtor M7546A $388 **The name** says it all. Buying a hard drive? Call here first.

SYSTEMS PERIPHERALS CD-ROMs NOTEBOOKS SOFTWARE

★★★★★ INCREDIBLE ★★★★ GREAT ★★★ GOOD ★★ RELIABLE ★ SATISFACTORY

"Do I look like an accountant?"

"I like to work with video equipment, not with numbers. But I have to do both to stay on top of my business. So I found the easiest way – QuickBooks®. I just sit down at the computer and the screen looks just like an invoice. QuickBooks memorizes everything. I type a keystroke or two to start most entries — and it finishes it for me — amazing. In a small business like mine, accounts receivable is very important and QuickBooks does it all for me automatically. The accounts receivable aging lets me know what my clients owe and for how long. The instant collections report tells me everything I need to know about my overdue accounts including the names and phone numbers to call. I never pictured bookkeeping being this easy."



Eric Replinger
Video Producer, Colorado Springs, CO

"Until QuickBooks, doing the bookkeeping was the craziest part of running our psychiatric management office. My favorite thing about QuickBooks is the reports. I can create reports just about any way I need them. I just scroll down a menu, select the kind of report, set the beginning and ending date, hit "enter" a couple of times and the report is done. That's it. I can even get comparison reports to see how things are doing from one day or one year to the next.

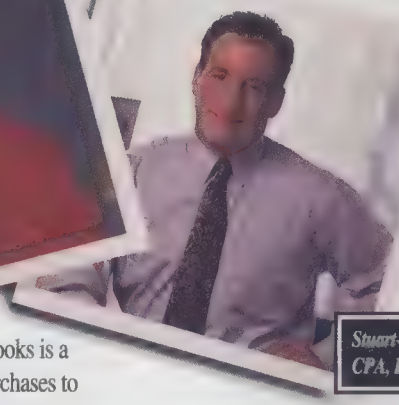
QuickInsight™ graphs give me a picture of the trends — and QuickZoom™ lets me see the numbers behind the graphs. QuickBooks is bookkeeping sanity, at last."

Susan Yeagley Sullivan
Psychiatric Management, San Diego, CA

"Last time I looked in the mirror I ran a dairy business. That means I can't afford to spend more time keeping my records than producing. When it comes to accounts payable, QuickBooks is a lifesaver. I just run a monthly cash flow report to time my purchases to match my inflows and outflows of money. I ask QuickBooks to tell me which bills are due, then decide which ones to pay— and it practically writes the checks for me. No question, I would recommend QuickBooks to anyone else in my field."

Craig Trible
Dairy Business Operator, Troy, VT

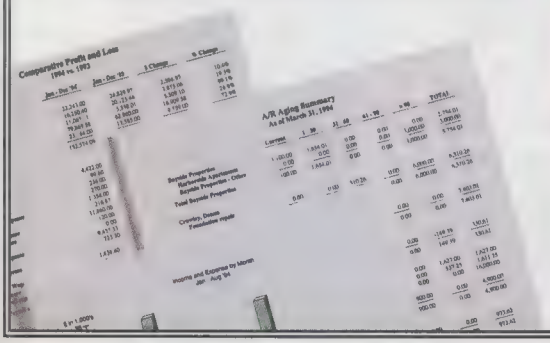
"I am an accountant. And I recommend QuickBooks to anyone who has a small business. Here are just some of the reasons. First, it's easy. You don't even need to know a debit from a credit. You can easily customize QuickBooks exactly for your business — perfect. QuickPay™ gives you complete payroll automatically, calculating deductions and maintaining employee information.

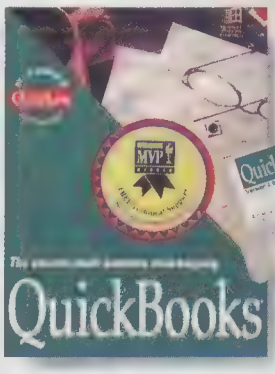


Stuart Cilley
CPA, Rohnert Park, CA

And here's the best part: come tax time all the information is there — you just print out the right reports for your accountant. Whenever I begin consulting a small business I ask two questions: 'Do you have a computer?' and 'Do you have QuickBooks?' "

QuickBooks® is easy, complete bookkeeping software from the makers of Quicken®. Pay bills and create invoices with QuickBooks and it does the rest for you. You'll have more organized, accurate records that help you make better, more profitable business decisions. Make your first one right now by calling to order QuickBooks at this special price.





Hassle-free accounting... for just $99

60-day money-back guarantee!

Order QuickBooks Today!

1-800-796-2600

24 hours a day, 7 days a week

Add QuickPay to your order for just $39.95.
(QuickPay not available in Canada.)
$8.00 shipping and handling will be added to your order. Additional international charges apply.

Expires 10/31/94

Ad Code: PM7J9

System requirements: **Windows:** IBM® compatible PC, 386 or higher, 2MB RAM minimum (4MB recommended), Windows 3.1 or higher, 8MB free on hard disk, and VGA or better monitor. **DOS:** IBM® compatible PC, 640K RAM. DOS 3.0 or higher and 3.5 MB free on hard disk (7.5 MB recommended). DOS and Windows feature sets vary. QuickBooks and Quicken are registered trademarks of Intuit. QuickPay is a trademark of Intuit. © Intuit 1994

Direct 60 Best Sources for Selection, Service, and Price

Company	Hours	Guarantees	Warranties	Sales/Service Rating	Guarantee/Warranty Rating	Overall Rating/Comments
Drake Int'l (800) 244-7800 Fax: (602) 820-1681 Phone tech support: (800) 997-3287 Founded: 1987 *Reader Service No. 721*	Sales: Mon.-Fri. 6 a.m.-7 p.m. (MST). Phone support: Mon.-Fri. 9 a.m.-5 p.m., Sat. 9 a.m.-2 p.m. Online support: 24 hours.	30-day money back.	3 years parts and labor; lifetime free tech support; Drake pays postage for 2-day replacements for up to 3 years.	2.5	3.5	★★★ **Name-brand** products at non–name-brand prices is the focus here.
Dustin Discount Software (800) 274-6611 Fax: (818) 772-7790 Founded: 1987 *Reader Service No. 722*	Sales: Mon.-Fri. 6 a.m.-6 p.m., Sat. 10 a.m.-2 p.m. (PST).	15% restocking fee, plus possible $5 shipping reimbursement fee for returns.	Manufacturer's warranty. Dustin pays postage for ground delivery.	1.5	2	★★ **First-class** software selection. No tech support—these folks specialize in pricing and delivery.
Empac Int'l (510) 683-8800 Fax: (510) 683-8662 Phone tech support: (510) 226-4752 Founded: 1985 *Reader Service No. 723*	Sales: Mon.-Fri. 8:30 a.m.-5 p.m. (PST). Phone support: Mon.-Fri. 9 a.m.-5 p.m.	30-day money back, 15% restocking fee for returns.	1 year parts and labor.	1.5	2	★★ **Broad selection** at attractive prices.
Envisions Solutions Technology (800) 365-7226 Fax: (415) 692-9064 Phone tech support: (415) 692-9067 Founded: 1989 *Reader Service No. 724*	Sales: Mon.-Fri. 6:30 a.m.-5:30 p.m., Sat. 9 a.m.-1 p.m. (PST). Phone and fax support: Mon.-Fri. 7 a.m.-5 p.m. Online support: 24 hours.	30-day money back, 15% restocking fee for returns.	1 year parts and labor. Envisions pays postage on 10-day turnaround warranty replacements.	3	3.5	★★★½ **Expert desktop** publishing advice and focused product selection.
EPS Technologies (800) 447-0921 Fax: (605) 966-5482 Phone tech support: (800) 526-4258 Founded: 1989 *Reader Service No. 725*	Sales: Mon.-Fri. 7 a.m.-7 p.m., Sat. 9 a.m.-3 p.m. (CST). Phone, online, and fax support: Mon.-Fri. 7 a.m.-7 p.m., Sat. 9 a.m.-3 p.m.	60-day money back, no restocking fee within 60 days.	3 years parts, 1 year labor, onsite service; lifetime toll-free tech support; some overnight replacement.	3.5	4	★★★★ **Quality computers** at a good price. Bonanza selection of CD-ROM titles.
Epson Direct (800) 374-7300 Fax: (310) 782-4455 Phone tech support: (800) 289-3776 Founded: 1993	Sales: Mon.-Fri. 6 a.m.-6 p.m. (PST). Phone and online support: Mon.-Fri. 6 a.m.-6 p.m. (EST). Fax and BBS support: 24 hours.	30-day money back.	1 year parts and labor, onsite service, and overnight replacement. One-way postage paid on returns, exchanges, and replacements.	4	3.5	★★★★ **Reputable name** and service, 100 people on tech support.
First Source Int'l (800) 535-5892 Fax: (714) 448-7760 Phone tech support: (800) 535-5892 Founded: 1989 *Reader Service No. 727*	Sales: Mon.-Sat. 7 a.m.-5 p.m. (PST). Phone and fax support: Mon.-Fri. 7 a.m.-4 p.m.	30-day money back, 20% restocking fee for returns made after 30 days.	Lifetime parts and labor on all memory products. Postage paid for overnight replacement.	3.5	3.5	★★★½ **Memory product** extravaganza with a good track record.

BEST-SELLER: 66MHz DX2 multimedia desktop $1,799

BEST-SELLER: Microsoft Office 4.2 competitive upgrade $265

BEST-SELLER: 33MHz 486 system $1,250

BEST-SELLER: ENV6100 scanner $499

BEST-SELLER: Not available

BEST-SELLER: ActionNote 500C notebook $2,199

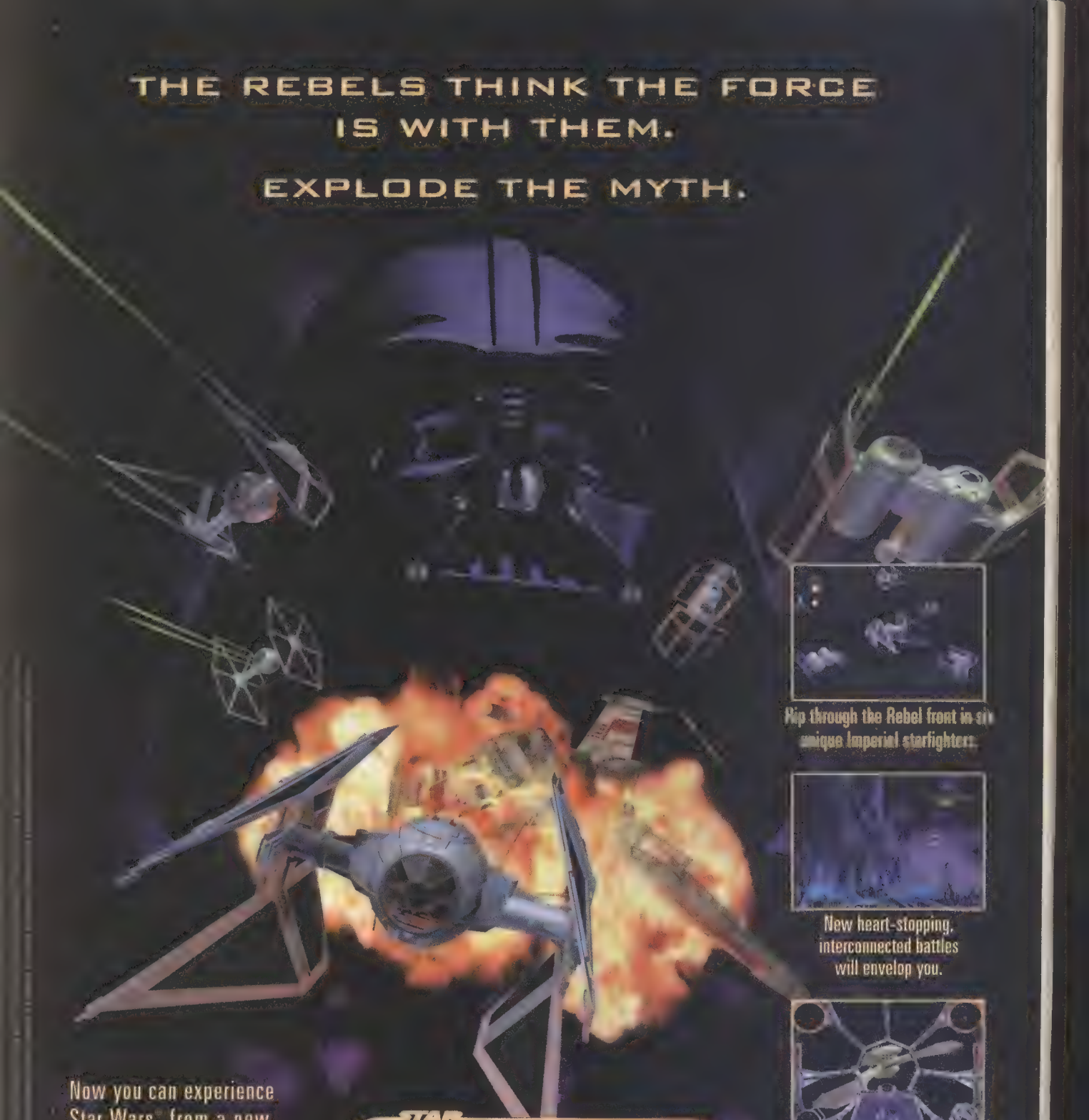
BEST-SELLER: 1X9-70 SIMM $43

SYSTEMS PERIPHERALS CD-ROMs NOTEBOOKS SOFTWARE

★★★★★ INCREDIBLE ★★★★ GREAT ★★★ GOOD ★★ RELIABLE ★ SATISFACTORY

THE REBELS THINK THE FORCE IS WITH THEM.

EXPLODE THE MYTH.



Rip through the Rebel front in six unique Imperial starfighters.

New heart-stopping, interconnected battles will envelop you.

Enhanced ultra-realistic 3D graphics and gameplay.

Now you can experience Star Wars™ from a new point-of-view. From the creators of X-Wing™, comes TIE Fighter™, the sequel that lets you fly for the Empire. The dark side of the Force beckons...dare you respond?

STAR WARS TIE FIGHTER

LUCAS Arts

COMING SOON FOR IBM PC AND COMPATIBLES AT YOUR FAVORITE SOFTWARE RETAILER, OR CALL 1-800-STARWARS.

Circle 140 on reader service card.

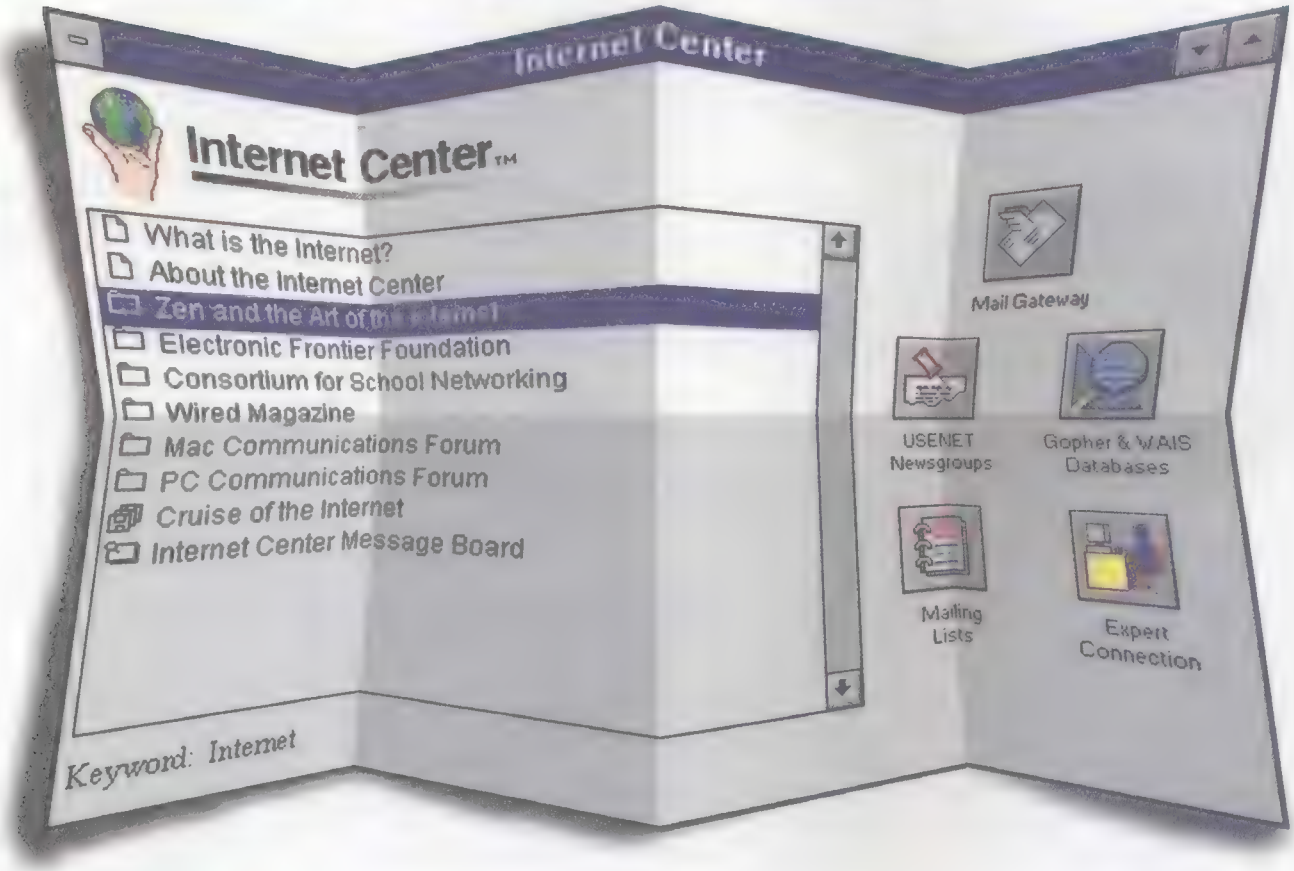
Direct 60 Best Sources for Selection, Service, and Price

Company	Hours	Guarantees	Warranties	Sales/Service Rating	Guarantee/Warranty Rating	Overall Rating/Comments
Gateway 2000 (800) 846-2000 Fax: (605) 232-2023 Phone tech support: (800) 846-2000 Founded: 1985 *Reader Service No. 728*	Sales: Mon.-Fri. 7 a.m.-10 p.m., Sat. 9 a.m.-4 p.m. (CST). Phone support: Mon.-Fri. 6 a.m.-midnight, Sat. 9 a.m.-2 p.m. Online and fax support: 24 hours.	30-day money back.	1 year parts and labor, onsite service. Postage paid for overnight replacement.	2.5	3.5	★★★ **First-rate** computers and cut-rate prices.
				BEST-SELLER: 66MHz 486DX2 P4D-66 PC $2,295		
Harmony Computers (800) 441-1144 Fax: (718) 692-4535 Phone tech support: (718) 692-2828 Founded: 1981 *Reader Service No. 729*	Sales: Mon.-Thu. 9 a.m.-6 p.m., Fri. 9 a.m.-2 p.m., Sun. 10:30 a.m.-4:30 p.m. (EST). Phone and fax support: during business hours.	7-day money back, 5 to 15% restocking fee for most returns except defective items.	90 days parts and labor, 7 days overnight replacement, lifetime tech support.	3	1	★★ **Friendly service** with decent prices.
				BEST-SELLER: Canon BJC-600 $559		
Hi-Tech USA (800) 831-2888 Fax: (408) 262-8772 Phone tech support: (408) 956-8285 Founded: 1989 *Reader Service No. 730*	Sales: Mon.-Fri. 8 a.m.-6 p.m., Sat. 10 a.m.-4 p.m. (PST). Phone and fax support: Mon.-Fri. 9 a.m.-5 p.m., Sat. 10 a.m.-3 p.m.	30-day money back, 15% restocking fee for returns made within 30 days.	1 year parts and labor for systems, 6 months parts and labor for components.	2.5	1.5	★★ **Fair deals** and a smart staff distinguish this company.
				BEST-SELLER: Not available		
IBM PC Direct (800) 426-2968 Fax: (919) 517-2050 Phone tech support: (800) 772-2227 Founded: 1992 *Reader Service No. 731*	Sales: Mon.-Fri. 8 a.m.-10 p.m., Sat. 9 a.m.-5 p.m. (EST). Phone, online, and fax support: 24 hours.	30-day money back.	Up to 3 years parts and labor (varies by product). Postage paid for returns, replacements, and exchanges.	3.5	4	★★★★ **Big Blue's** other direct channel. Committed to good deals on good products.
				BEST-SELLER: ValuePoint 433DX $1,610		
Inmac (800) 547-5444 Fax: (800) 972-3210 Phone tech support: (800) 972-9233 Founded: 1977 *Reader Service No. 732*	Sales: Mon.-Fri. 6:30 a.m.-7:30 p.m., Sat. 7:30 a.m.-4:30 p.m. (CST). Phone and fax support: 24 hours. BBS: 24 hours.	10% restocking fee on returns for 30 to 59 days, 15% 60 to 120 days after purchase.	1 year onsite service. Postage paid for exchanges, replacements, and overnight replacements.	4	2.5	★★★½ **Built-to-order** systems are a specialty.
				BEST-SELLER: 466MVP $2,549		
Insight Direct (800) 755-3875 Fax: (602) 902-1180 Phone tech support: (800) 377-3000 Founded: 1986 *Reader Service No. 733*	Sales: 24 hours. Phone support: Mon.-Thu. 6 a.m.-9 p.m., Fri. 6 a.m.-8 p.m., Sat. 6 a.m.-6 p.m., Sun. 8 a.m.-4 p.m. (PST). Online and fax support: 24 hours.	30-day money back.	1 year parts and labor, onsite service for local sales, some overnight replacement, lifetime tech support.	4.5	3.5	★★★★ **Committed to service.** Well-trained salespeople can handle most tech support questions.
				BEST-SELLER: Insight PCI P60 basic $1,799		
Keydata Int'l (800) 486-4800 Fax: (908) 756-7359 Phone tech support: (800) 486-9100 Founded: 1990 *Reader Service No. 734*	Sales: Mon.-Fri. 9 a.m.-7 p.m., Sat. 10 a.m.-4 p.m. (EST). Phone support: Mon.-Fri. 9 a.m.-7 p.m., Sat. 10 a.m.-4 p.m. Fax support: 24 hours.	30-day money back, 10% restocking fee for returns.	1 year parts and labor, lifetime tech support.	3	2.5	★★★ **Notebooks expert** backs products with strong support.
				BEST-SELLER: Keynote Commander $1,775		

SYSTEMS PERIPHERALS CD-ROMs NOTEBOOKS SOFTWARE

★★★★★ INCREDIBLE ★★★★ GREAT ★★★ GOOD ★★ RELIABLE ★ SATISFACTORY

Your Road Map For The Information Superhighway— America Online®



America Online Introduces The Easiest Way To Reach The Internet.

AMERICA Online

Yes! I'd like to try America Online — FREE.

Send me the free software and trial membership. I understand there's no risk — if I'm not completely satisfied, I may cancel without further obligation.

NAME _____

ADDRESS _____

CITY _____

STATE _____ ZIP _____

( ) _____
HOME PHONE

SELECT DISK TYPE AND SIZE —

Windows*: ❑ 5.25 ❑ 3.5

DOS: ❑ 5.25 ❑ 3.5 ❑ High Density ❑ Low Density

*To use America Online for Windows, you must have a 386 PC or higher, 4MB of RAM, a VGA monitor, a mouse, a modem, and a working copy of Windows 3.1.

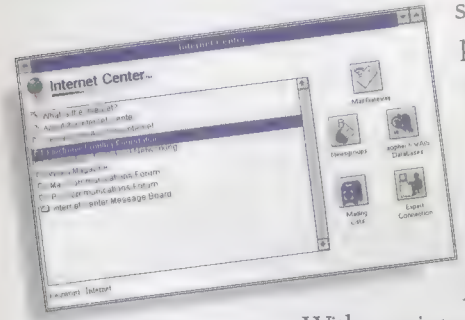
Use of America Online requires a major credit card or checking account. Limit one free trial per household. America Online is a registered service mark of America Online, Inc. Other names are service marks or trademarks of their respective owners.

0675/W

Test Drive The Internet On America Online For 10 Hours, FREE.

The Internet Center, An America Online Exclusive!

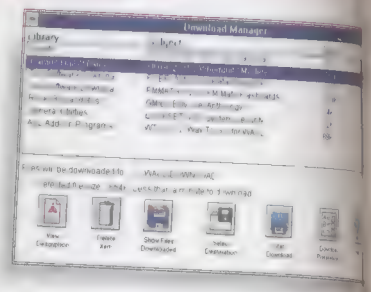
Before you can exchange ideas with people around the world, you have to learn your way around the information superhighway. No problem. Just go to our Internet Center—your road map to the Internet. You'll find we've made it as easy to handle as America Online.



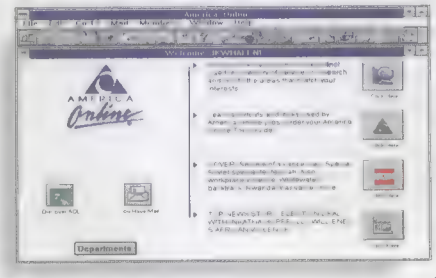
With a point and click, you can access newsgroups on hundreds of topics, send e-mail to other online services or overseas, access information on everything from home brewing to NASA news using Gopher and WAIS databases—and more. Best of all, on America Online, you can navigate the Internet without worrying about message counts, block counts, or surcharges—it's all at no extra charge!

Plus, Expert Advice, Fast Downloading And More.

In addition to the Internet, you can check out everything that America Online offers. Get expert advice from over 300 hardware and software manufacturers and developers. Send comments and questions to the editors of your favorite magazines. Exchange programs in our software libraries, featuring over 40,000 files to download.



With multi-file downloading and 9600 baud modem access it's fast and easy. Plus, you can join online computer clubs and special interest groups. You can even talk with other members in real-time conversations, conferences and classes. All on the most "clickable" online service there is.



Start Your Test Drive Today.

So hit the information superhighway and head for America Online. It's easy. Just mail the attached card or fax it to us at 1-800-827-4595. Or simply call 1-800-827-6364, Ext. 0675 to order today!

AMERICA Online

1-800-827-6364, Ext. 067

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS MAIL PERMIT NO. 9096 VIENNA, VA

POSTAGE WILL BE PAID BY ADDRESSEE

AMERICA Online

8619 Westwood Center Drive
Vienna, VA 22182-9806

Direct 60 Best Sources for Selection, Service, and Price

Company	Hours	Guarantees	Warranties	Sales/Service Rating	Guarantee/Warranty Rating	Overall Rating/Comments
Maximus Computers (800) 394-6299 Fax: (818) 357-9140 Phone tech support: (800) 899-0142 Founded: 1991 *Reader Service No. 735*	Sales: Mon.-Fri. 7 a.m.-7 p.m., Sat. 9 a.m.-5 p.m. (PST). Phone support: Mon.-Fri. 9 a.m.-6 p.m., Sat. 9 a.m.-5 p.m. Online support: 24 hours. Fax support: Mon.-Sat. 9 a.m.-6 p.m.	30-day money back.	3 years parts, lifetime labor, 1 year onsite service. Postage paid for returns, exchanges, and replacements within 30 days.	3.5	4.5	★★★★ BEST-SELLER: Mega-Media Pro Pentium 60 $2,845 **Multimedia** at cheap prices: Maximus's strategy is paying off.
MegaHaus (800) 786-1187 Fax: (713) 333-3024 Phone tech support: (713) 333-1944 Founded: 1987 *Reader Service No. 736*	Sales: Mon.-Fri. 8 a.m.-7 p.m., Sat. 9 a.m.-3 p.m. (CST). Phone support: Mon.-Fri. 9 a.m.-6 p.m. Fax support: 24 hours.	15% restocking fee for full-refund returns.	At least 1 year parts and labor, terms vary by product.	1	0.5	★ BEST-SELLER: Iomega Tape 250 tape drive $159 **Hard-drive kingpin,** always competitively priced. Good selection on storage and peripherals.
Micron Computer (800) 515-9197 Fax: (208) 465-3424 Phone tech support: (800) 877-8856 Founded: 1992 *Reader Service No. 737*	Sales: Mon.-Fri. 7 a.m.-8 p.m., Sat. 8 a.m.-5 p.m. (MST). Phone and fax support: during business hours.	30-day money back.	1 year parts and labor, onsite service; lifetime tech support. Postage paid for overnight replacement.	2.5	3.5	★★★ BEST-SELLER: Magnum Series PCs $2,000 to $5,000 **An innovation leader** with consistently solid products and prices.
MicroProfessionals (800) 800-8300 Fax: (708) 339-8333 Phone tech support: (800) 800-8308 Founded: 1984 *Reader Service No. 738*	Sales: Mon.-Fri. 8 a.m.-7 p.m., Sat. 9:30 a.m.-3 p.m. (CST). Phone and fax support: Mon.-Fri. 8 a.m.-6 p.m.	30-day money back.	1 year parts and labor, onsite service, and overnight replacement. Postage paid for overnight replacement.	3.5	3.5	★★★½ BEST-SELLER: 66MHz 486DX desktop $1,799 **The Jimmy Stewart** of the Direct 60: Decent products, decent prices, a decent company.
Micro Warehouse (800) 367-7080 Fax: (908) 905-5245 Phone tech support: (800) 367-7080 Founded: 1987 *Reader Service No. 739*	Sales: 24 hours. Phone support: Mon.-Fri. 8 a.m.-midnight, Sat. 9 a.m.-5 p.m. (EST). Fax support: 24 hours.	Money back on certain items.	Manufacturer's warranty, overnight replacement. Postage paid for returns or exchanges of defective products.	4	3.5	★★★★ BEST-SELLER: Not available **Great prices** and variety.
Midwest Computer Works (800) 659-6757 Fax: (708) 459-6933 Phone tech support: (708) 459-9410 Founded: 1988 *Reader Service No. 740*	Sales: Mon.-Fri. 8 a.m.-7 p.m. (CST). Phone and fax support: Mon.-Fri. 8:30 a.m.-5:30 p.m.	10-day money back.	Manufacturer's warranty.	3	3	★★★ BEST-SELLER: Sony GDM-17SE1 17-inch monitor $1,099 **Wide selection** and quick delivery are this company's stock in trade.
MidWest Micro (800) 682-7248 Fax: (800) 562-6622 Phone tech support: (800) 262-6622 Founded: 1982 *Reader Service No. 741*	Sales: Mon.-Fri. 9 a.m.-7 p.m., Sat. 10 a.m.-4 p.m. (EST). Phone support: Mon.-Fri. 9 a.m.-7 p.m., Sat. 10 a.m.-4 p.m. Online support: Mon.-Fri. 9 a.m.-7 p.m. Fax support: during business hours.	30-day money back, variable restocking fee for some returns.	Manufacturer's warranty. Postage paid for overnight replacement.	4	3.5	★★★★ BEST-SELLER: Infotel 14.4 fax modem $89 **Product variety** and competitive pricing backed by some of the friendliest service around.

SYSTEMS PERIPHERALS CD-ROMs NOTEBOOKS SOFTWARE

★★★★★ INCREDIBLE ★★★★ GREAT ★★★ GOOD ★★ RELIABLE ★ SATISFACTORY

DECpc LPv+ 425sx

- *Intel486™ SX/25MHz*
- *4MB RAM*
- *170MB IDE hard drive*
- *14" SVGA 1024(i) color monitor*
- *S3™ 805 GUI accelerator*
- *3 Year Warranty*

$1,348 *$47/mo. lease*

Lean.

Do more. Work faster. Spend less.

Run lean. Go green. Get mean.

Not next year. Not next quarter. Now.

Not to worry. Our three new PCs can make this daunting challenge just a tad easier for you.

First, there's the lean DECpc LPv+ 425sx. In 1993, *PC Week** magazine called our space-saver "one of the 12 best products" of the year.

Not ones to rest on their laurels, our braintrust tinkered with it so it has even fancier doodads—a beefed-up hard drive, faster serial port and 2.88 floppy support.

Yet it uses less than 30 watts in sleep mode—surpassing Energy Star specs. And who wouldn't want to save a few bucks on their electric bills?

The price? It starts at a mere $1,348.

Next up is another green model—DECpc LPx+ 433sx.

Sure, it has a small price tag, starting at just $1,527. And sure, it helps you pay less to your electric company.

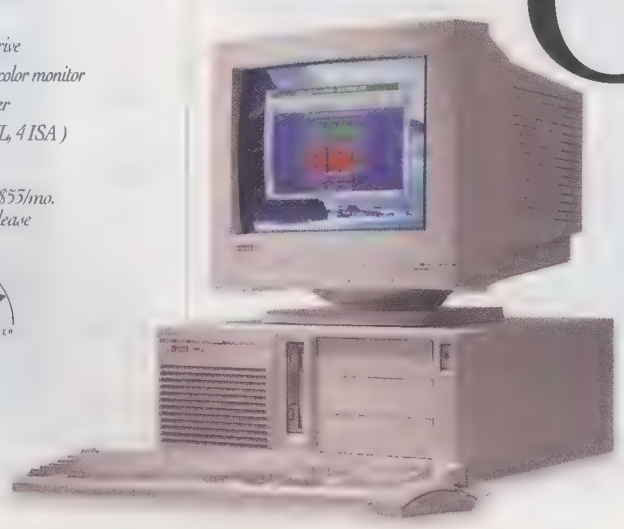
But wait, there's more. Because at this plain vanilla price it delivers the power, graphics and upgradability of a true Windows™ platform.

Green.

DECpc LPx+ 433sx

- *Intel486™ SX/33MHz*
- *4MB RAM*
- *170MB IDE hard drive*
- *14" SVGA 1024(i) color monitor*
- *S3 805 GUI adapter*
- *6 slots (2 VESA-VL, 4 ISA)*
- *3 Year Warranty*

$1,527 *$53/mo. lease*



Finally, there's our downright mean DECpc LPx 560. Ready for the power, speed and performance of Pentium™ technology—but not ready to pay a premium for it? Our advice: save your money.

With Digital you can have a Pentium processor PC at the price of yesterday's slowpoke. Just $2,798.

Made-by-Digital quality. Made-by-who prices.

Does lower price translate to lower quality? Not when our name goes on the box, thank you.

In fact, all three are engineered by the same folks who build our high-end PCs: Us.

And they're covered by the same warranty we offer on all our systems. Three full years.†

Call now. Not next year. Not next quarter. Check out the specs on this page, and call for whichever Digital PC fills your bill.

DECpc LPx 560

- *Pentium™ 60MHz processor*
- *256KB cache*
- *8MB RAM*
- *340MB IDE hard drive*
- *14" SVGA 1024(i) color monitor*
- *PCI local bus*
- *6 slots (3 ISA, 2 PCI, 1 interleaved)*
- *S3 928 video adapter*
- *3 Year Warranty*

$2,798 *$97/mo. lease*

DECpc LPx 566

- *Pentium™ 66MHz processor*

$3,098 *$108/mo. lease*

intel inside pentium PROCESSOR

Downright Mean.

So you can start running lean, going green and getting mean in a hurry.

Not next year. Now.

To order, or for the name of the Digital reseller near you, call

1 800 804-3134

8:30 a.m. to 8:00 p.m. ET, Mon.-Fri.
Please reference JBG when you call.

digital™ PC

Beyond the box.

© DIGITAL EQUIPMENT CORPORATION, 1994. The DIGITAL logo and DECpc are trademarks of the Digital Equipment Corporation. Beyond the Box is a service mark of the Digital Equipment Corporation. Pentium, i486, Intel486 and the Intel Inside and Pentium Processor Logos are trademarks of Intel Corporation. S3 is a trademark of S3 Corporation. Windows is a trademark of Microsoft Corporation. Digital believes that the information in this advertisement is accurate as of its publication date; such information is subject to change without notice. Digital is not responsible for any errors. Actual monitor may differ from that shown. Not all products available worldwide. *December 27, 1993. †Three-year limited hardware warranty. Certain restrictions and exclusions apply.

Direct 60 Best Sources for Selection, Service, and Price

Company	Hours	Guarantees	Warranties	Sales/Service Rating	Guarantee/Warranty Rating	Overall Rating/Comments
NEC Select (800) 374-8000 Fax: (508) 264-8831 Phone tech support: (800) 388-8888 Founded: 1992 *Reader Service No. 742*	Sales: Mon.-Fri. 8:30 a.m.-8:00 p.m. (EST). Phone support: Mon.-Fri. 8:30 a.m.-8:00 p.m. Online and fax support: 24 hours.	30-day money back.	Up to 3 years parts and labor, 1 year onsite service. Postage paid for one-way, 2-day shipments.	3.5	3	★★★½ **An improving member** of the old guard goes direct. BEST-SELLER: Image 486es $2,440
Northgate Computer Systems (800) 548-1993 Fax: (612) 361-5095 Phone tech support: (800) 446-5037 Founded: 1987 *Reader Service No. 743*	Sales: Mon.-Fri. 7 a.m.-7 p.m. (CST). Phone and online support: 24 hours. CompuServe, BBS: 24 hours.	30-day money back.	1 year parts and labor, onsite service, and overnight replacement. Postage paid for overnight replacement.	3.5	2.5	★★★ **Reputable products** at pleasing prices. Northgate is big and well-known for good reason. BEST-SELLER: Superb Energy Star System $999
PCs Compleat (800) 669-4727 Fax: (800) 669-8329 Phone tech support: (800) 697-4727 Founded: 1991 *Reader Service No. 744*	Sales: Mon.-Fri. 24 hours, Sat.-Sun. 10 a.m.-8 p.m. (EST). Phone and online support: Mon.-Fri. 9 a.m.-9 p.m.	30-day lowest price, money back. Same-day shipping. Installed software discount.	30 days overnight replacement, manufacturer's warranty, lifetime support. Postage paid for defect returns or exchanges.	4.5	4	★★★★½ **Makes customer** satisfaction smart business; discounts if PCs Compleat installs software. BEST-SELLER: Toshiba T4700CT notebook $4,949
PC Connection (800) 800-0005 Fax: (603) 446-7791 Phone tech support: (800) 722-8324 Founded: 1982 *Reader Service No. 745*	Sales: 24 hours, except Sun. 5 p.m.-Mon. 8 a.m. (EST). Phone support: Mon.-Fri. 9 a.m.-7:30 p.m.	60-day money back, no restocking fee if item is returned complete.	120 days parts and labor, onsite service for some systems, overnight replacement. Postage paid for exchanges.	3.5	3	★★★½ **Reliable service,** and most salespeople can answer tech questions. BEST-SELLER: Microsoft Windows for Workgroups Add On $47.95
PC Zone (800) 258-2088 Fax: (206) 881-3421 Phone tech support: (800) 258-2088 Founded: 1986 *Reader Service No. 746*	Sales: Mon.-Fri. 5 a.m.-11 p.m., Sat. 5 a.m.-8 p.m., Sun. 6 a.m.-8 p.m. (PST). Phone, online, and fax support: Mon.-Fri. 8 a.m.-6 p.m.	30-day money back, up to 120 days replacement for defective products.	Postage paid for overnight replacement of defective products.	3	2	★½ **A terrific mix** of product and price points. BEST-SELLER: Microsoft Office Version 4.2 $468.98
Publishing Perfection (800) 782-5974 Fax: (414) 252-9120 Phone tech support (414) 252-5000 Founded: 1987 *Reader Service No. 747*	Sales: Mon.-Sat. 9 a.m.-5 p.m. (CST). Phone support: Mon.-Fri. 8 a.m.-5 p.m.	30-day money back on hardware, 15% restocking fee for returns.	Manufacturer's warranty. One-way postage paid for replacement and exchange of defective products.	2	3.5	★★★ **Experts on** printers, scanners, and multimedia. BEST-SELLER: LaserPix 2,400-dpi LaserJet 4 upgrade $1,199
Quantex Microsystems (800) 288-0566 Fax: (908) 563-0407 Phone tech support: (800) 288-0566 Founded: 1984 *Reader Service No. 748*	Sales: Mon.-Thu. 9 a.m.-9 p.m., Fri. 9 a.m.-6 p.m., Sat. 10 a.m.-4 p.m. (EST). Phone and fax support: Mon.-Thu. 9 a.m.-9 p.m., Fri. 9 a.m.-6 p.m.	30-day money back, no restocking fee for returns made within 30 days.	1 year parts and labor, onsite service, overnight replacement; lifetime tech support. All postage paid.	3.5	4	★★★★ **Excellent bet** for high-end systems. BEST-SELLER: Q486DX2/66MM-4 system $2,095

SYSTEMS PERIPHERALS CD-ROMs NOTEBOOKS SOFTWARE

★★★★★ INCREDIBLE ★★★★ GREAT ★★★ GOOD ★★ RELIABLE ★ SATISFACTORY

ALL VS. ALMOST.

Introducing the Dell Latitude. If you can get more notebook, buy it.

Dell's built-in trackball **VS.** *tacked-on trackballs. (Makes you wonder what else they forgot.)*

Crisp, clear active matrix or dual-scan STN color displays **VS.** *washed-out pastels on single-scan passive screens.*

Dell's affordable Type II/III PCMCIA expansion for industry-standard peripherals **VS.** *overpriced proprietary accessories.*

33MHz with local bus video **VS.** *25MHz with standard ISA video. (No comparison.)*

Access to dedicated notebook technicians 24 hours a day, 7 days a week **VS.** *access to an answering machine.*

45 days of Getting Started software support **VS.** *you're on your own.*

A notebook in this price range with this many features and this level of support **VS.** *good luck.*

DELL LATITUDE MOBILE COLOR

$2,199

Business Lease[2]*: $81/MO.*

- 4MB OF RAM
- 170MB HARD DRIVE

ORDER CODE **#5000699**

DELL BEST BUY

DELL LATITUDE MOBILE SALES MANAGER

$2,499 SAVE $750

Business Lease: $92/MO.

- 4MB OF RAM
- 170MB HARD DRIVE
- ACT!-CONTACT MANAGER
- MICROSOFT® POWERPOINT
- MICROSOFT WORKS
- 24/96 FAX MODEM
- ATTACHE CARRYING CASE

ORDER CODE **#5000700**

DELL LATITUDE MOBILE POWERPACK

$2,699 SAVE $350

Business Lease: $100/MO

- 8MB OF RAM
- 170MB HARD DRIVE
- 14.4 FAX MODEM
- EXTRA BATTERY
- ATTACHE CARRYING CASE

ORDER CODE **#5000701**

FEATURES COMMON TO THESE CONFIGURATIONS:

- 9.5" DUAL-SCAN STN COLOR DISPLAY
- INTEL® i486™ SX SL-ENHANCED 33MHz PROCESSOR
- LOCAL BUS VIDEO WITH 512K VRAM
- TYPE II/III PCMCIA EXPANSION SLOT
- 3.5" DISKETTE DRIVE
- NiMH BATTERY
- MS-DOS® 6.2, WINDOWS™ 3.1
- DIMENSIONS 8.6" x 11.7" x 1.7"
- WEIGHT 6.4 LBS
- COMMWORKS (5 COMMUNICATION TOOLS IN 1 PACKAGE)
- AMERICA ONLINE

DELL™

To Order, Call

800-626-9524

Keycode #11XCS

HOURS: MON-FRI 7AM-9PM CT • SAT 10AM-6PM CT • SUN 12PM-5PM CT
CANADA* 800-668-3021 • MEXICO CITY* 228-7811

intel inside

*Prices valid in the U.S. only. Some products and promotions not available in Canada or Mexico. [2]Business leasing arranged by Leasing Group, Inc. Intel and the Intel Inside logo are registered trademarks and i486 is a trademark of Intel Corporation. MS-DOS and Microsoft are registered trademarks and Windows is a trademark of Microsoft Corporation. Screen image source: Kodak Photo CD Photo Sampler ©1991 Eastman Kodak Company. Photographer: Steve Kelly. Dell disclaims proprietary interest in the marks and names of others.

© 1994 Dell Computer Corporation. All rights reserved.

Direct 60 Best Sources for Selection, Service, and Price

Company	Hours	Guarantees	Warranties	Sales/Service Rating	Guarantee/Warranty Rating	Overall Rating/Comments
Royal Electronics (800) 486-0008 Fax: (818) 330-2717 Phone tech support: (800) 486-2708 Founded: 1988 *Reader Service No. 749*	Sales: Mon.-Sat. 7 a.m.-7 p.m. (PST). Phone and fax support: Mon.-Sat. 9 a.m.-5 p.m.	30-day money back.	3 years parts and labor.	2	2	★★ **Dependable desktop** deal-makers.
Sager Midern Computer (800) 669-1624 Fax: (818) 964-2381 Phone tech support: (800) 669-1624 Founded: 1985 *Reader Service No. 750*	Sales: Mon.-Fri. 7 a.m.-6 p.m., Sat. 9 a.m.-3 p.m. (PST). Phone and fax support: Mon.-Fri. 8:30 a.m.-5:30 p.m.	30-day money back, no restocking fee for returns made within 30 days.	1 year parts and labor, 30 days overnight replacement for defectives only. All return postage paid.	3.5	3.5	★★★½ **Notebooks kingpin** delivers quality with good prices.
Surplus Software Int'l (800) 753-7877 Fax: (503) 386-4227 Phone tech support: (800) 753-7877 Founded: 1992 *Reader Service No. 751*	Sales: Mon.-Fri. 7 a.m.-5 p.m. (PST). Phone and fax support: Mon.-Fri. 7 a.m.-5 p.m.	30-day satisfaction guaranteed.	Manufacturer's warranty. Overnight replacement. Surplus pays postage for all replacements.	3	4.5	★★★★ **Discontinued products** at bargain pricing.
Swan Technologies (800) 468-9044 Fax: (814) 237-6136 Phone tech support: (800) 468-7926 Founded: 1984 *Reader Service No. 752*	Sales: Mon.-Fri. 8 a.m.-8 p.m. (EST). Phone support: Mon.-Fri. 9 a.m.-9 p.m., Sat.-Sun. 9 a.m.-5 p.m. Online support: 24 hours.	30-day money back.	1 year parts, labor, onsite service, tech support, overnight replacement. Swan pays postage on all replacements and exchanges.	4	2.5	★★★½ **Solid prices** all around, but look for special deals in networking products.
TC Computers/Treasure Chest Peripherals (800) 723-8282 Fax: (504) 461-8095 Phone tech support: (800) 723-6380 Founded: 1986 *Reader Service No. 753*	Sales: Mon.-Sat. 8 a.m.-8 p.m. (CST). Phone, online, and fax support: Mon.-Fri. 8 a.m.-8 p.m., Sat. 10 a.m.-4 p.m.	30-day money back.	1 year (peripherals) to 2 years (systems) parts and overnight replacement; lifetime labor and tech support.	3.5	3.5	★★★½ **Growing computer** maker and peripheral seller offers laudable products at fair prices.
Tri-Star Computer Corp. (800) 800-7668 Fax: (602) 731-4979 Phone tech support: (800) 800-2690 Founded: 1987 *Reader Service No. 754*	Sales: Mon.-Fri. 7 a.m.-6 p.m. (PST). Phone support: Mon.-Fri. 7 a.m.-6 p.m. Online support: 24 hours.	30-day money back.	2 years parts and labor, 1 year onsite service and overnight replacement.	4	4	★★★★ **CAD computer** specialists deliver high-caliber computers.
USA Flex (800) 872-3539 Fax: (708) 351-7204 Phone tech support: (800) 955-1488 Founded: 1977 *Reader Service No. 755*	Sales: 24 hours. Phone support: 24 hours. Fax support: Mon.-Fri. 8 a.m.-6 p.m. (CST).	Money back (length varies by product), 20% restocking fee for some returns.	3 years parts, 1 year labor, 2 years onsite service, lifetime support, replace defective peripherals overnight.	4.5	4	★★★★½ **One-stop shopping** with good pricing.

BEST-SELLER: Royal Ultra Media $4,595

BEST-SELLER: NP843D 33MHz 486DX $2,420

BEST-SELLER: Check-It 3.0 $19.95

BEST-SELLER: Swan Performance 66MHz 486DX2 $2,049

BEST-SELLER: VL-Bus mother-board $739 Intel, or $689 AMD

BEST-SELLER: Tri-CAD P5 PCI Station $3,795

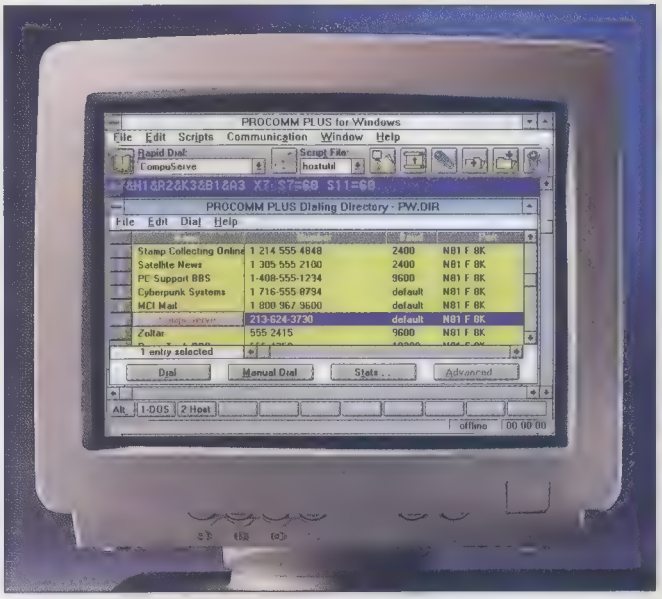
BEST-SELLER: Sony CD-ROM drive with Sound Blaster 16 $299

SYSTEMS PERIPHERALS CD-ROMs NOTEBOOKS SOFTWARE

★★★★★ INCREDIBLE ★★★★ GREAT ★★★ GOOD ★★ RELIABLE ★ SATISFACTORY

New Delrina WinComm PRO makes powerful communications easy. So why struggle with Procomm?

Delrina WinComm PRO



Procomm Plus™ for Windows

To take part in the on-line revolution, you'll need a powerful communications package.

One that handles all major file transfer protocols, like Zmodem, Xmodem, Ymodem, Kermit and others. One that supports every popular terminal emulation. And has a powerful scripting language for automating on-line sessions.

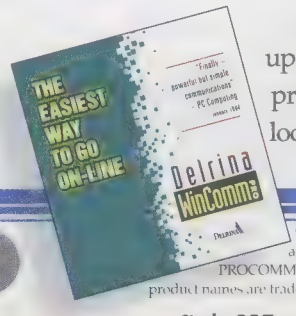
But perhaps you'd prefer software that puts that power right in front of you in a clean, intuitive interface. One that not only makes it easier to go on-line but simpler to do things once you're there. With features like a customizable, icon-based phonebook. Drag-and-drop file transfer. A customizable button bar where you can place your most common tasks. Even a scrollback buffer that lets you refer back to text from your current session, as well as text from previous sessions.

In that case the only choice is new Delrina WinComm PRO™. The one *PC Computing* called "...Intuitive enough for a novice user, yet still packed with enough sophisticated features to keep an on-line junkie happy."

	Delrina WinComm PRO	Procomm Plus™ for Windows*
Pre-defined scripts for on-line services	MCI Mail, CompuServe, GEnie, AT&T Mail, BIX, Delphi, Dow Jones & NewsNet	MCI Mail & CompuServe
Drag-and-drop file sending	Yes	No
Built-in script recorder	Yes	Yes
Phonebook	Customizable	Fixed
Split-screen session window	Yes	No
Scrollback buffer	200 pages	31 pages
Supports all popular file transfer protocols and terminal emulations	Yes	Yes
Virus detection during download	Yes	No
Shares a COM port with WinFax PRO	Yes	No
Integrated off-line text editor	Yes	No

Buy Delrina WinComm PRO alone, or as part of the money-saving Delrina Communications Suite™ which also includes Delrina WinFax PRO™, far and away the best-selling fax software in the world. Either way, you'll have the power you need and the ease of use you've only dreamed of.

Call for information or to upgrade from any Procomm product for just $49. Or see your local dealer to upgrade immediately.



DELRINA
1-800-268-6082

*Version 1.02 WinComm PRO is a trademark of Delrina (Delaware) Corp. Delrina, WinFax PRO and Delrina Communications Suite are trademarks of Delrina (Canada) Corp. PROCOMM and PROCOMM PLUS for Windows are trademarks of DATASTORM TECHNOLOGIES, INC. All other product names are trademarks of their respective owners. ©1994 Delrina (Canada) Corporation. All rights reserved.

Circle 227 on reader service card.

Best Sources for Selection, Service, and Price

Company	Hours	Guarantees	Warranties	Sales/Service Rating	Guarantee/Warranty Rating	Overall Rating/Comments
VTech Computers (800) 819-0070 Fax: (800) 947-3976 Phone tech support: (800) 964-3976 Founded: 1976 *Reader Service No. 756*	Sales: Mon.-Fri. 7 a.m.-8:30 p.m., Sat. 9 a.m.-6 p.m., Sun. 10 a.m.-3 p.m. (CST). Phone, online, and fax support: Mon.-Fri. 8 a.m.-7 p.m., Sat. 10 a.m.-4 p.m., Sun. 11 a.m.-3 p.m.	30-day money back, no restocking fee for returns made within 30 days.	3 years parts, labor, and overnight replacement; 1 year onsite service; lifetime tech support. Postage paid for returns.	3.5	4	BEST-SELLER: Expo 66MHz 486DX2 system $2,199	★★★★ **Serious systems** and bare-knuckles pricing make VTech the best thing from Illinois farm country since the McCormick reaper.
Zenith Data Systems (800) 582-0524 Fax: (800) 472-7211 Phone tech support: (800) 227-3360 Founded: 1992 *Reader Service No. 757*	Sales: Mon.-Fri. 7 a.m.-7 p.m. (CST). Phone support: Mon.-Fri. 7 a.m.-7 p.m. Fax support: during business hours. BBS support: 24 hours.	30-day money back.	1 to 3 years onsite parts and labor, 24-hour exchange for notebooks.	3.5	3.5	BEST-SELLER: Z-Lite 425L $1,599	★★★½ **Maintaining high** standards in the midst of change.
Zenon Technology (800) 899-6119 Fax: (818) 935-1826 Phone tech support: (800) 299-7898 Founded: 1990 *Reader Service No. 758*	Sales: Mon.-Fri. 7 a.m.-7 p.m., Sat. 9 a.m.-5 p.m. (PST). Phone support: Mon.-Fri. 7 a.m.-7 p.m., Sat. 9 a.m.-5 p.m.	30-day money back.	3 years parts and labor; overnight replacement.	2.5	3.5	BEST-SELLER: Z-Optimus II PCI $3,799	★★★ **Strong warranty** policies make this company a player.
Zeos Int'l (800) 554-5218 Fax: (800) 362-1205 Phone tech support: (800) 228-5390 Founded: 1981 *Reader Service No. 759*	Sales: 24 hours. Phone, online, and fax support: 24 hours.	30-day money back.	1 year parts and service, onsite service; lifetime technical support; overnight replacement.	5	3.5	BEST-SELLER: Zeos Pantera 90 $2,595	★★★★½ **Quality computers** and support. Stumbling in the early 90s, Zeos has resurfaced as a champion contender.

SYSTEMS PERIPHERALS CD-ROMs NOTEBOOKS SOFTWARE

★★★★★ INCREDIBLE ★★★★ GREAT ★★★ GOOD ★★ RELIABLE ★ SATISFACTORY

How We Chose the Direct 60

To develop *PC Computing*'s Direct 60, we commissioned Russ Lockwood and Peter Ruber, two outside experts who have studied the direct market as journalists and researchers. They chose companies with exceptional price, selection, and/or service.

We also asked a panel of six experts within Ziff-Davis—analysts, editors, and researchers who know the market well—to nominate other notable direct companies.

We then faxed questionnaires to the companies, asking about their service policies—specifically, what they offer in the way of guarantees, warranties, technical support, and sales support. The final list included companies recommended by Lockwood or Ruber (and in many cases both) or at least two Ziff-Davis experts.

Our zero to five ratings are based on the company's responses to our 6-page questionnaire. The highest sales and service ratings go to companies with, among other things, 24-hour sales and 24-hour, toll-free technical support; online, fax-back, or BBS tech support in addition to phone support; at least a month of training for salespeople; and a guarantee that they'll pay postage on overnight replacements.

To arrive at the guarantee and warranty rating we assessed policies—does the company offer a full year of onsite repair? Three years? Lifetime tech support, 30-day money-back guarantees, overnight replacement, and all postage paid on returns and exchanges also won points.

Finally, our overall rating is based on both the sales and service, and guarantee and warranty ratings. When averaging scores for overall ratings, we rounded up, so companies with 4 stars for sales and service and 4.5 for guarantees and warranties won a 4.5-star rating for overall excellence.

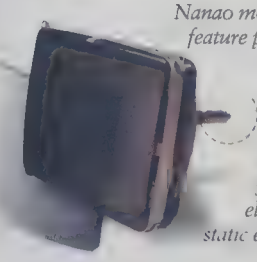
We didn't rate the direct companies on how well they *deliver* on their promises. That's subjective, and testing for it still may not have fairly measured a company's service and product. Our list will get you started. Good luck.

Superior In Every Detail.

PC EXPO BOOTH #2278

Every Nanao monitor undergoes intense scrutiny and testing to ensure maximum performance and product reliability.

At Nanao, details make all the difference in creating our family of professional display monitors. From the product design and manufacturing that takes place in our factory to the end user's working environment, Nanao pays attention to every detail. In engineering. Assembly. Product testing. Quality control. Shipping. Customer support. From the very first days of the company, we set out to be an innovator in monitor technology. And, in a few short years, we have achieved that goal. Today, Nanao has the lowest repair rate in the monitor industry, the highest product reliability, and a fast-growing number of enthusiastic customers. So if you're looking for a superior monitor, start with the details. We do.



Nanao monitors feature protective coatings and panels that reduce glare and eliminate static electricity.

Nanao was the first monitor company to join in partnership with the EPA Energy Star Program.

Nanao T Series and F Series monitors have captured every major award from the industry's leading publications.

3 YEAR WARRANTY

A heritage of precision craftsmanship and attention to detail has been designed into Nanao's family of display monitors.

Model	Size	Dot Pitch	Scan Frequency	Recommended Resolution
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Our monitor family teams ultra high resolution with a list of impressive technical specifications.

1-800-800-5202

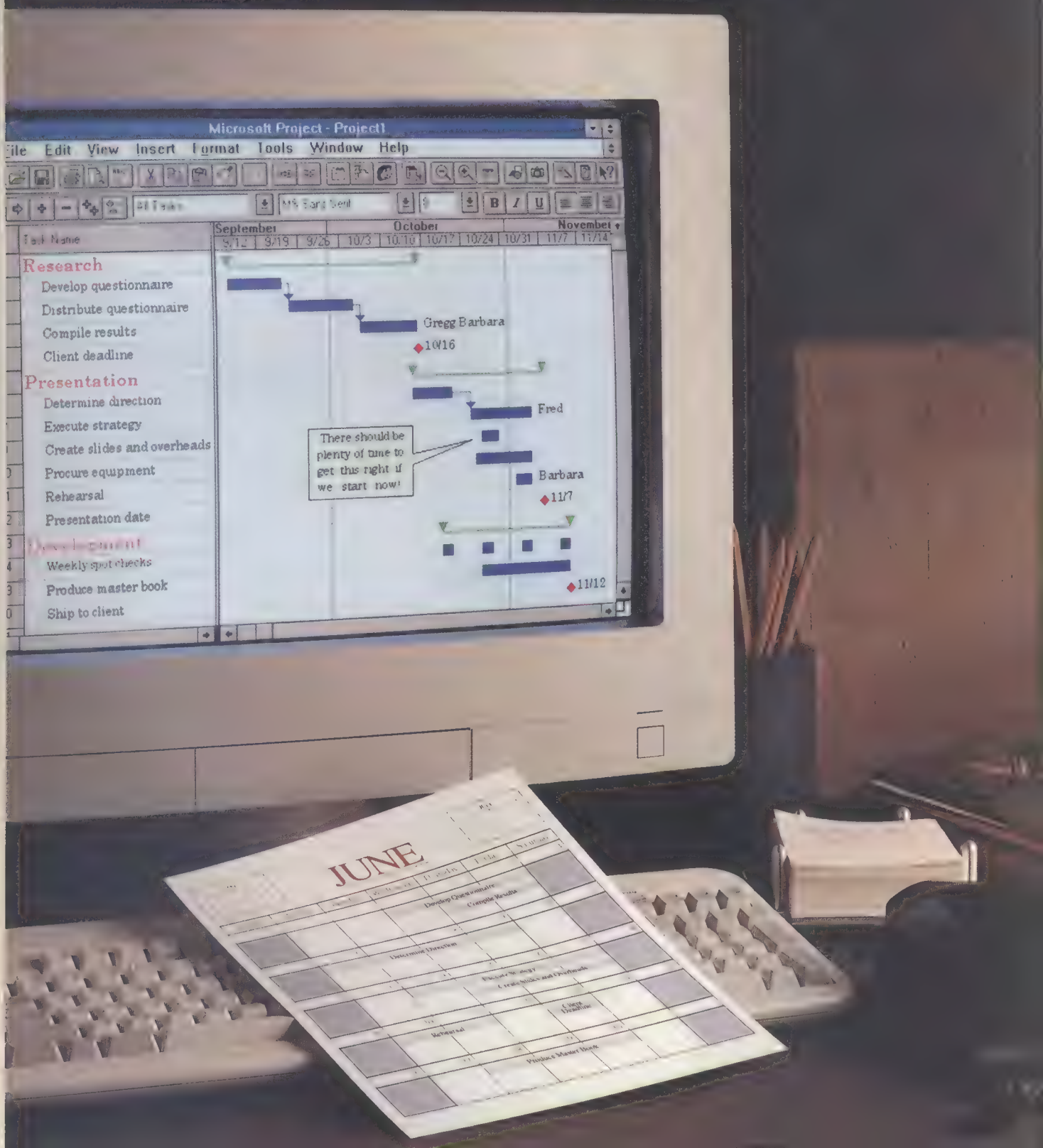
NANAO

NANAO USA CORPORATION
23535 Telo Avenue, Torrance, CA 90505
(310) 325-5202 Fax: (310) 530-1679

Circle 212 on reader service card.

[illegible]

THE CALENDAR HAS BEEN AROUND FOR 6,000 YEARS. WE FELT IT WAS TIME TO IMPROVE IT.



Introducing new Microsoft® Project version 4.0.

As long as people have had things to plan, they've always looked for better ways to organize and manage the process.

Now there's software that helps you do it more effectively than ever.

It helps you plan, manage and communicate with ease.

With new Microsoft Project, planning is easier than you ever imagined. Simply type a list of what's to be done. By whom. And how long they'll need.

Your plan is automatically converted to easy-to-read reports. Calendars. And charts. (Like the examples you can see at the left.)

It watches how you work and guides you step by step.

Like other programs in the Microsoft Office family, Microsoft Project features IntelliSense™ technology. Simply stated, your software now senses what you want to do and helps you do it.

For example, PlanningWizards offer suggestions as you go, to help you avoid problems down the line.

Cue Cards help you set up your plan with step-by-step instructions that stay on the screen as you work.

With GanttChartWizards, you just choose a great-looking format and it does the rest. (Just like the ChartWizard in Microsoft Excel.)

What's this all mean? Simply that you can get started right away. And learn as you go along.

Now it's easy to keep everyone in the loop.

Chances are you're not the only one working on the project. Microsoft Project was developed with this in mind.

You can now distribute reports through your existing electronic mail system*. Click on a button to collaborate. Click to delegate. Click to get the status of your plan. Even set reminders on important tasks.

To do all this (and a lot more) all you have to do is take the first step: Call Microsoft at (800) 671-3955, Dept. KZ5, for more information or for the name of a reseller near you.

You'll wonder how you ever managed without it.

The world's most popular business project planning software just got better with Microsoft Project version 4.0.

Microsoft

*Some workgroup features require MAPI-compliant mail systems, acquired separately. © 1994 Microsoft Corporation. All rights reserved. Microsoft is a registered trademark and IntelliSense is a trademark of Microsoft Corporation. In the 50 United States, call (800) 671-3955, Dept. KZ5. Customers in Canada, call 800-563-9048. Outside the 50 United States and Canada, call your local Microsoft subsidiary or (206) 936-8661.

Help

BRIAN LIVINGSTON SHOWS HOW TO USE SCANDISK

Of Dentists and Disk Drives

Brushing and flossing prevent tooth decay. Regular eye examinations will keep your prescription up-to-date. A routine physical can detect heart disease. And running ScanDisk on your hard disk can nip data loss in the bud. The leap from medicine to disk drives might seem far-fetched, but your disk needs proper preventive care, too. Bad sectors and poorly maintained hard disks account for most data loss, but you can avoid these problems easily with an ounce of preventive medicine.

In MS-DOS 6.2, Microsoft has finally come around and quietly introduced ScanDisk, a crucial diagnostic, maintenance, and repair utility users have long been asking for. ScanDisk is poorly documented and most DOS users know little or nothing about how much it can help guard their programs and data against potential disaster.

ScanDisk tests hard disks and floppy disks for directory damage that can trap files and crash applications. Even better, it can detect and correct weak spots on your hard disk and move your data to safety, before the flaw gets bad enough to actually corrupt data.

There are, of course, other disk surface-scan utilities, including time-tested veterans such as Norton Disk Doctor, which is part of Symantec's Norton Utilities, and DiskFix, included in Central Point Software's PC Tools for DOS. ScanDisk's advantage over these third-party utilities is clear: It's free with MS-DOS 6.2.

No Perfect Disks Before I reveal ScanDisk's features, it's important to know why such a utility is necessary.

No disk is ever created perfect at the factory. Every hard disk bears a layer of magnetic coating that contains microscopic imperfections. Because some of these flaws are large enough to interfere with a magnetic 1 or 0 being written to the disk, whole clusters (usually less than 1 percent of a new disk) may be marked "bad" by the manufacturer so nothing will be written there. But over time, tiny flakes of the coating may fly off as the disk rotates, which causes a gradual increase in the number of sectors that should be considered "bad."

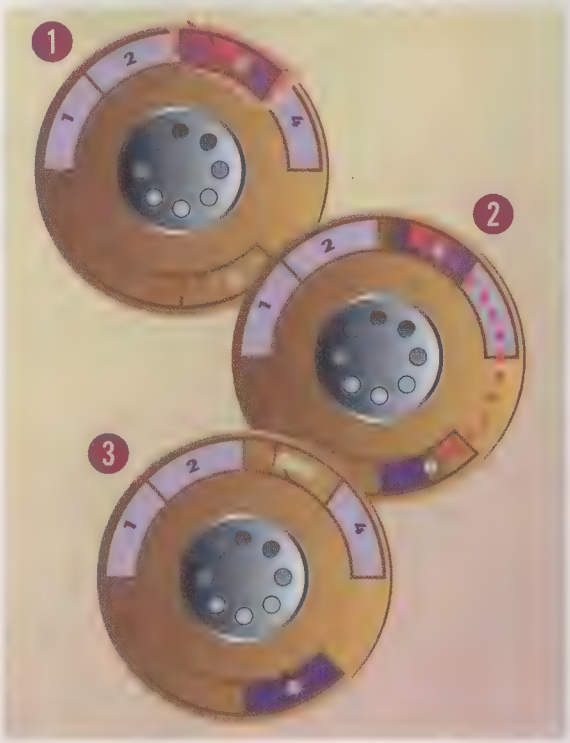
DOS never had a provision for noticing and marking these bad sectors as they deteriorated. In fact, until MS-DOS 6.2, using the FORMAT command on a disk essentially cleared the sectors that had been marked "bad," and marked them "good" again. FORMAT then performed its own integrity test, which was not nearly as thorough as a real surface-scan utility.

Rules of the Road Because MS-DOS 6.2 was just a bug-fix upgrade, Microsoft didn't even bother to print a new manual for it. Buyers of version 6.2 received the same old MS-DOS 6 manual, which contained no information about ScanDisk. If you knew enough to type HELP WHATSNEW, you could see a whole paragraph on ScanDisk, along with a few of the other features added to MS-DOS 6.2. Or you could type HELP SCANDISK, and see a few screens of computerese.

Because there is so little in print on ScanDisk, I'll summarize the utility's command-line format for you. In general, ScanDisk's syntax looks like this:

SCANDISK *{drivespec} {mode} {options}*

HOW IT WORKS FIX DISKS & FILES WITH SCANDISK



MS-DOS 6.2's replacement for CHKDSK is SCANDISK. In addition to being able to fix lost clusters, SCANDISK can perform a low-level surface analysis on a disk drive.

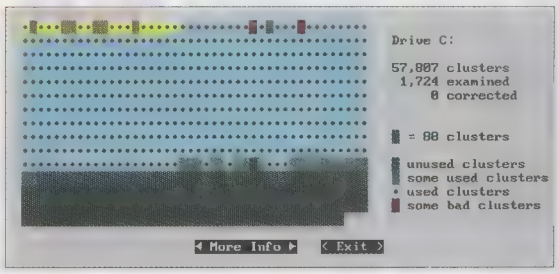
1. SURFACE SCAN Scanning the disk's surface cluster by cluster, ScanDisk finds a file occupying clusters 1, 2, 3, and 4. However, some of cluster 3 is unreadable or becoming unreliable.

2. MOVE DATA ScanDisk moves as much of the data as possible to a vacant cluster, for example, cluster 6. If some data is unreadable, ScanDisk fills the bad spots with zeros.

3. MARK CLUSTER ScanDisk marks cluster 3 "bad" and updates its reference, as well as the file's location, in the File Allocation Table.

SNAPSHOT A GLIMPSE OF SCANDISK

Surface Scan: The factory marked your disk drive's faulty clusters. But clusters go bad after you buy the disk, too. ScanDisk identifies them and moves the files to safety.



If you want to scan the current disk only, type the command without parameters:

```
SCANDISK
```

In this mode, ScanDisk immediately starts its analysis, which shows its progress in a character-mode display. (You should not run ScanDisk under Windows or any task-switcher, because ScanDisk can be confused by open files.) After checking your directory structures, ScanDisk asks if you would like it to perform a surface scan. If you say yes, it looks for bad sectors and displays a report with its findings and recommendations, if any.

For ScanDisk's disk drive spec, you can type any number of hard-drive or floppy-drive letters, or use the switch /ALL to make ScanDisk examine all hard disks. (ScanDisk does not analyze network drives.) For example, all of the following are valid ScanDisk commands:

```
SCANDISK C:
SCANDISK A: C: D:
SCANDISK /ALL
```

You can also specify a variety of modes on the command line:

- /CHECKONLY tells ScanDisk to analyze your drives, but not to change anything.
- /AUTOFIX cleans up corrupt file fragments without prompting you first. In this mode, ScanDisk converts lost clusters into files with names like FILE0001.CHK, and places these files in the root directory of the drive being examined. These files, which were already in a DOS netherworld, could possibly be reassembled by a disk guru but are probably useless—just bits of loose data.
- /AUTOFIX /NOSAVE deletes any lost clusters instead of saving them into files. This is a quick way to make sure these clusters don't affect any other files you write later.
- /CUSTOM tells ScanDisk to use settings you put into a SCANDISK.INI file in the directory where you installed DOS.

In addition to these modes, ScanDisk also supports several optional switches:

- /SURFACE makes ScanDisk proceed from its directory checkup to its surface scan without waiting for you to press a key at a prompt. This is the best option when you plan to run a ScanDisk routine regularly in your AUTOEXEC.BAT (see "A ScanDisk a Day Keeps the Doctor Away," page 184).
- /MONO tells ScanDisk not to use colors—a must for black-and-white displays.
- /NOSUMMARY suppresses the full-screen reports ScanDisk displays after checking each disk. If there are errors, this also prevents ScanDisk from halting and asking you to insert an Undo floppy disk into a floppy drive before proceeding. Unless you are a disk drive expert, you probably would never need anything ScanDisk would write on such an Undo floppy disk.

ScanDisk is very flexible—you may use any combination of parameters:

```
SCANDISK /ALL /AUTOFIX
SCANDISK /AUTOFIX /NOSAVE
SCANDISK C: D: /CUSTOM
SCANDISK /ALL /SURFACE
/NOSUMMARY
SCANDISK C: D: /CHECKONLY /MONO
```

The Best Medicine Now we come to ScanDisk's most useful and least documented feature: the ability to detect spots on your disk that are beginning to weaken, and move data to a stronger cluster before any files are actually lost.

/TIME is the oddly named switch that enables this important capability. This switch makes ScanDisk monitor the average read, write, and seek times of your disk while carrying out a surface analysis. This allows ScanDisk to determine which sectors require a lot of extra work to read. At some point, those sectors will fade enough to threaten your data. ScanDisk can move your files to safety and mark those faded sectors "bad" so that new files won't be written there.

CONTENTS

WINDOWS: *Ed Bott answers your cries for help about Help.* **186**

DOS: *Journey into the insides of DOS with Jeff Prosise as he demonstrates secret programming calls.* **192**

APPLICATIONS: *DTP software too complicated? See what your word processor can do.* **200**

NETWORKING: *Before you buy a new server, get the most from the old one.* **208**

TOOLKIT: *Woody Leonhard and Vincent Chen link Visio to Visual Basic.* **214**

PC CONTACT: *Download this month's files and talk to PC Computing's editors online.* **228**

TECHNOLOGY:

HOW IT WORKS: *Ron White shows you how tomorrow's PCs will configure themselves with Plug and Play.* **222**

F1: *What makes SCSI better than IDE? Robert L. Hummel explains and edifies.* **224**

SPEC WATCH: *Thermal wax-transfer printers offer great graphics at a reasonable price.* **231**

It's so easy to avoid strange crashes with this utility that everyone running MS-DOS 6.2 should take advantage of it on a regular basis. ScanDisk requires only about a minute to check most smaller disks (say under 200MB), so if your system is more than a few months old, you might find it worthwhile to run ScanDisk every day. If you have a large new hard disk, on the other hand, you might want to put up with a 10-minute ScanDisk routine only once a month.

ScanDisk creates a file called SCANDISK.LOG in the root directory of your C: drive where it reports the results of its efforts. This is a plain text file that you should print each time you run ScanDisk. If the report shows any lost clusters or other problems, you can check your data's integrity immediately.

Unfortunately, just like every other new program I've seen from Microsoft, ScanDisk can interfere with some other DOS utilities, and may even be incompatible with major computer products.

The worst problem crops up if you run ScanDisk after you've installed MS-DOS 6.2 on top of IBM's PC DOS 6.1 and used IBM's disk compression. This could occur if you have a PS/2 with PC DOS 6.1 and have compressed your hard disk with SuperStor. Apparently, Microsoft didn't bother to test ScanDisk on its former business partner's version of DOS, because ScanDisk can totally scramble the contents of the compressed disk.

According to Microsoft, the MS-DOS 6.2 upgrade process also leaves the two hidden system files (IBMBIO.COM and IBMSYS.COM) in the root directory of C: when version 6.2 is installed over any version of PC DOS. These old 6.1 files can cause your keyboard to freeze and the Windows File Manager to behave erratically. You can delete these files with a new command in MS-DOS 6.*x* called DELTREE. Running the following command in the root directory of C: will delete the two hidden files, IBMBIO.COM and IBMSYS.COM:

```
DELTREE /Y C:\IBM*.COM
```

Data loss may result if you use ScanDisk with an Acculogic sIDE-3/Plus IDE disk controller in one specific instance. If the IDE drive type is not supported by a PC's ROM BIOS, and the BIOS chip on the Acculogic disk controller is therefore enabled, there is a conflict when ScanDisk (or any surface-scan utility) makes Interrupt 25h and 26h calls to read and write sectors. For more information, call Acculogic's technical support department at (714) 454-2441.

Also, you're not supposed to run ScanDisk in a DOS session under Windows—ScanDisk might "fix" a valid file that simply happened to be open in a Windows application. Windows for Workgroups 3.11 has a more common, but less potentially disastrous hazard. If you turn on the so-called 32-Bit File Access in Windows for Workgroups' Control Panel, the 32-bit driver sometimes writes an extra file entry into the DoubleSpace File Allocation Table, MDFAT, on a compressed disk. These entries are relatively harmless, but they take up disk space. When you run ScanDisk, it may report "nnnn bytes of data on drive x: that might be one or more lost files or directories, but which is probably just taking up space." ScanDisk will proceed to rename these lost files with names like FILE0001.CHK. You can delete these files to reclaim the disk space, and no valid files will be affected.

A Rough Jewel Despite the relatively rare conflicts mentioned above, ScanDisk is truly a bargain that all users of MS-DOS 6.2 should take advantage of. With the investment of a very small amount of time, ScanDisk can pay big dividends in reliability and peace of mind.

BRIAN LIVINGSTON is the author of *Windows 3.1 Secrets* (1992) and *More Windows Secrets* (1993), and is the co-author of *Windows Gizmos* (1994). All three are published by IDG Books.

EXPERT TIP A SCANDISK A DAY KEEPS THE DOCTOR AWAY

Here's an easy way to run ScanDisk at regular intervals. Say you want to correct disk errors every Monday when you first start your computer and are getting your morning coffee. Add the following lines to your AUTOEXEC.BAT:

```
REM Run Scandisk every Monday, if not already run.
ECHO. | DATE | FIND /I "Mon" > C:\DOS\TESTDAY1.TXT
COPY C:\DOS\TESTDAY1.TXT C:\DOS\TESTDAY2.TXT
IF EXIST C:\DOS\TESTDAY2.TXT GOTO DOSCAN
IF EXIST C:\DOS\SCANDONE.TXT DEL C:\DOS\SCANDONE.TXT
GOTO CLEANUP
:DOSCAN
IF EXIST C:\DOS\SCANDONE.TXT GOTO CLEANUP
SCANDISK /ALL /CUSTOM
ECHO Scandisk was run today. > C:\DOS\SCANDONE.TXT
IF NOT ERRORLEVEL 1 GOTO CLEANUP
TYPE C:\SCANDISK.LOG | MORE
PAUSE
:CLEANUP
DEL C:\DOS\TESTDAY*.TXT
:CONTINUE
```

The /CUSTOM switch after the SCANDISK command above makes the utility look for settings in the SCANDISK.INI file found in your MS-DOS 6.2*x* directory. I recommend that you use the settings below.

```
[ENVIRONMENT]
ScanTimeOut = On
[CUSTOM]
DriveSummary = Off
AllSummary = Off
Surface = Always
CheckHost = Always
SaveLog = Overwrite
Undo = Never
```

Use EDIT or another text editor to make the changes. For complete documentation, read the comments in the INI file. (Note: The lines in the INI file that begin with semicolons are comments.)

SO WHAT DO YOU WANT FOR $2,999?

THE PRICEPOINT WEEKLY

Dell's Pentium entry leads pack in price, value

By Randy Wussler

Dell Computer Corp. instantly leapt into the price leadership position of the Pentium market with the release of the 90MHz Dimension XPS P90.

With an initial $2,999 street price and a configuration featuring a CD ROM and 1M byte of video RAM, the model looks to be an even better value than 60MHz entries from Gateway 2000 and Packard Bell. Dell told us that we could expect delivery of the new system within eight days of our order.

AST Research's dealers did

PC Week, April 25, 1994

DELL DIMENSION™ XPS P90 PENTIUM™ 90MHz SYSTEM

$2,999* | BUSINESS LEASE◊ $111/MO.

- 8MB RAM
- 540MB HARD DRIVE
- VS15 MONITOR (15" CRT, NI)
- PCI VIDEO CARD WITH 1 MB VIDEO RAM
- ONE DISKETTE DRIVE (3.5")
- SPACESAVER KEYBOARD
- MS-DOS® 6.21, MICROSOFT® WINDOWS™ 3.1, MOUSE

HOT FEATURES

- **ENHANCED IDE**
- **256KB EXTERNAL WRITE BACK CACHE**
- **2X MULTI-SESSION CD ROM DRIVE WITH MOTORIZED TRAY**

ORDER CODE ***#500017***

CUSTOMER SATISFACTION #1 J.D. POWER AND ASSOCIATES PC USERS • 1993 SM

Unbelievably, the new Dell Dimension 90 MHz Pentium XPS P90 is only $2,999.

At this price, and with this special high-performance configuration, *PC Week* says it is an "... even better value than the 60MHz entries from Gateway 2000 and Packard Bell." Better yet, it's available; this configuration can usually be delivered within 8 days.

And with it comes all of the support and service that helped Dell rank highest in J.D. Powers & Associates' 1993 Desktop PC Customer Satisfaction Study.†

If you think you can find more for your money, call around. Then call Dell.

We think you'll get the deal of the year.

DELL™

To Order, Call

800-388-1510

Keycode #11XCT

HOURS: MON-FR 7AM-9PM CT • SAT 10AM-6PM CT • SUN 12PM-5PM CT
CANADA* 800-668-3021

intel inside pentium PROCESSOR

*Promotional pricing expires 7/31/94. †1993 J.D. Power and Associates Desktop Personal Computer Satisfaction Study conducted among 1,956 business user respondents. *Prices valid in the U.S. only. Some products and promotions not available in Canada. ◊Business leasing arranged by Leasing Group, Inc. MS-DOS and Microsoft are registered trademarks and Windows is a trademark of Microsoft Corporation. The Intel and Pentium logos and Pentium are trademarks of Intel Corporation. Dell disclaims proprietary interest in the marks and names of others. ©1994 Dell Computer Corporation. All rights reserved.

THERE'S MORE TO IT THAN PRESSING F1

Need Color? A Quick History? Help Is on the Way

A well-designed application packs more information into its online Windows Help files than it puts into the printed manuals. Once you've mastered the basics, spending just a few minutes wandering through an application's online Help files can turn up shortcuts and suggestions that will save you hours of trouble later. Virtually all Windows applications use compiled Help files designed to be read by WINHELP.EXE, the Windows Help Engine. Whenever you press F1 or click the Help menu from within an application, your action launches WINHELP and loads the appropriate file.

By default, Windows 3.1 Help includes a powerful search engine that lets you browse through keywords and topics. If you're clever, you can create some speedy shortcuts for getting the most from Help.

Color Therapy For starters, let's fix one of Windows' most painful aesthetic lapses. By default, WINHELP uses only one color to highlight special text—a hideous lime-green that virtually disappears into the bright white background.

Here's how to change colors: Use Notepad or another plain text editor to open WIN.INI. Search for the section heading [Windows Help]. The code for each color is stored as a series of three numbers, each between 0 and 255; they determine the amount of red, green, and blue, respectively. If the necessary entries aren't there, you'll have to add them yourself. Here's an example:

```
[Windows Help]
JumpColor=255 0 0
IFJumpColor=255 0 0
PopUpColor=0 0 128
IFPopupColor= 0 0 128
MacroColor=128 0 128
```

JumpColor (in this example, red) indicates hypertext links between topics in the active help file, while IFJumpColor (which is also red) tags pointers to topics in another file. Likewise, PopUpColor and IFPopupColor (both blue) add a dashed underline in the current file and mark pop-up explanations in external files. (The IF stands for interfile jumps and pop-ups, by the way.) MacroColor (purple) calls out embedded macros that execute when you click on the highlighted text. To find out more about color codes, go to Main, select Control Panel, Colors, Color Palette, Define Custom Colors. In the Red, Green, and Blue boxes, type 0, 128, or 255 (or any combination thereof), and note the solid box for results.

Beware of one gotcha that lies waiting if you alter the colors in WINHELP: Some Help-file creators use rich text format (RTF) to add color (see "Create Your Own Help Files," below). If they choose the same colors you use, you'll discover decorative headings that don't jump or pop up when you click them—all they do is play dead.

Study History The History button on the Help toolbar activates the pop-up Help list that keeps track of your footsteps as you wander through a help file. After consulting Help, don't close the file—instead, minimize the WINHELP application. This keeps the History active and lets you easily retrace your steps. If you close and then restart Help, not only do you waste time waiting for it to reload, you also clear the History list.

If you understand how History works, you can take advantage of an undocumented WINHELP feature to switch rapidly between help files. Let's say you're trying

BEST BUYS CREATE YOUR OWN HELP FILES

You can now create or modify Windows Help files. Tools such as Blue Sky Software's RoboHelp or WexTech's Doc-To-Help take Microsoft Word documents in Rich Text Format (RTF) and compile them into Help files.

Since you can access Help files as standalone programs, you can even create all-purpose tutorials that users can get to from Program Manager. A good use might be to detail a work procedure such as instructions on filling out forms or filing reports. Both products create hypertext links, buttons, pop-ups, embedded graphics, tables of contents, indexes, and everything you need for developing good Help screens or tutorials.

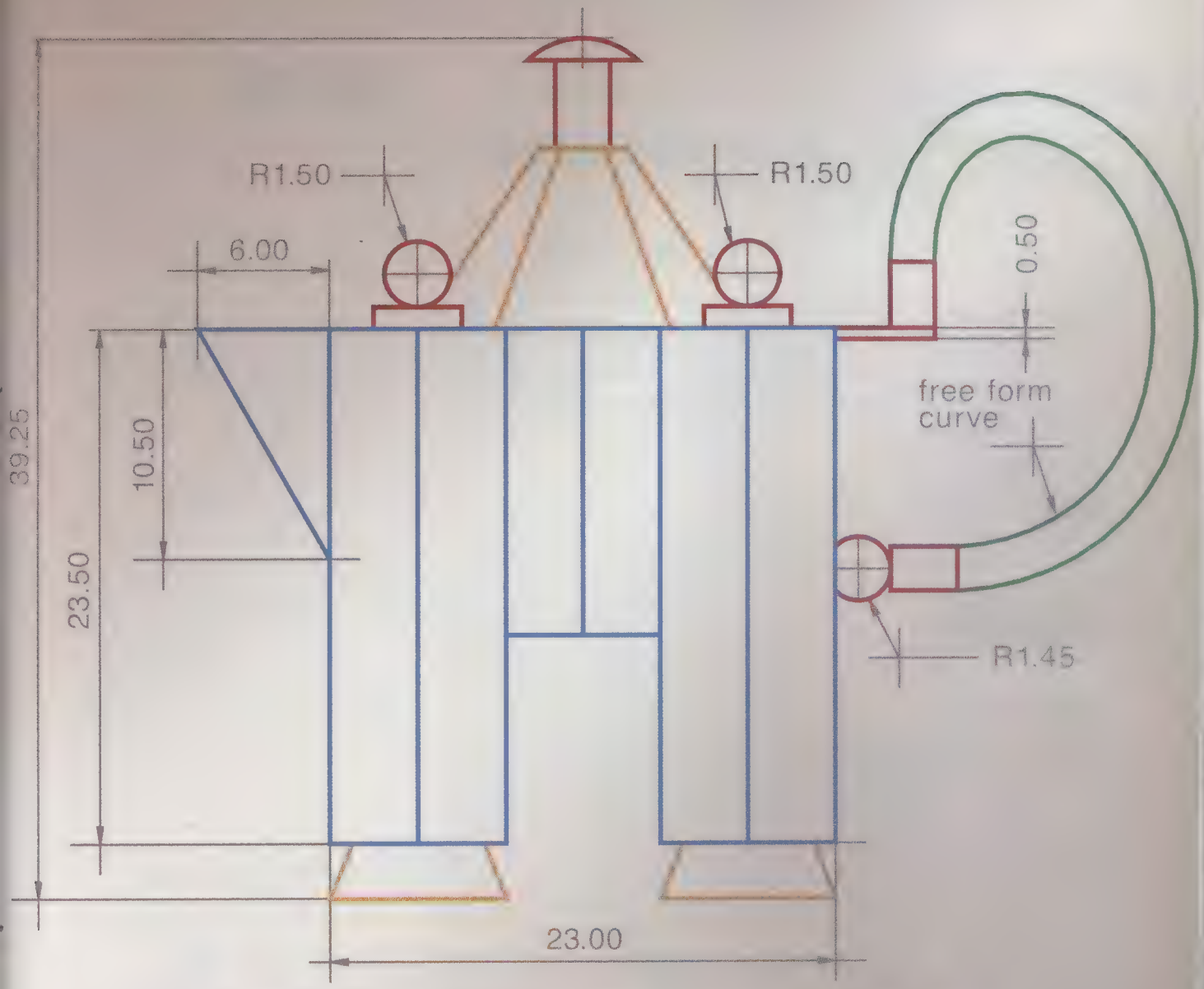
RoboHelp
$499
Blue Sky Software
(800) 677-4946
Reader Service No. 765

Doc-To-Help
$295
WexTech Systems
(212) 949-9595
Reader Service No. 766

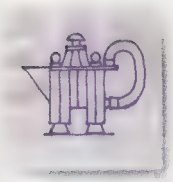
1. RoboHelp The latest release of Blue Sky's RoboHelp (Version 2.6) creates Help files for Windows NT as well as Windows 3.1, and you can create documents in Microsoft Word 2.0 or 6.0.

2. Doc-To-Help This product is available in two versions: 1.5 is for Microsoft Word 2.0 users and 1.6 is for Word 6.0 users. The latter creates Windows 3.1 and NT Help files. WexTech provides Version 1.6 free of charge to all registered 1.5 users.

—YAEL LI-RON



Twenty minutes ago this was a cocktail napkin.



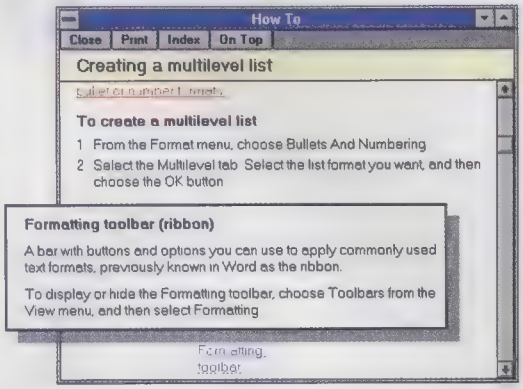
Introducing AutoSketch® Release 2 for Windows. As quickly as you can sketch out an idea, AutoSketch software lets you turn it into a precise, technical drawing. Draw a floor plan and you know the square footage. Draw a pipe and you know the diameter. AutoSketch gives you tools and icons that increase the versatility of the Windows™ interface, so you can draw instinctively. In fact, you can turn rough ideas into accurate geometry just by clicking and dragging the mouse. Or enhance your drawings with TrueType™ fonts and predrawn symbols, like doors and windows. All this for only **$299**.* And it's from the makers of AutoCAD® software. Intrigued? See your retailer. Or, call 1-800-228-3601, and ask for Infopack A124. Outside the U.S., fax 206-485-0021.

Autodesk

* U.S. suggested retail price. Special pricing available for students, faculty, and schools. ©1993 Autodesk, Inc. All rights reserved. Autodesk, the Autodesk logo, AutoSketch, and AutoCAD are registered trademarks of Autodesk, Inc. Windows is a trademark of Microsoft Corporation. All other trademarks are property of their respective owners. Teapot sketch based on an original design by Michael Graves Architects.

EXPERT TIP HELP COLOR CUSTOMIZATION

Use Different Colors: By making a simple change to your WIN.INI file, you can get Windows Help to use different colors. Here we set PopUpColor = 0 0 128 so our hypertext links at the bottom of the screen come up blue instead of lime-green. Most of the the screen is still black and white.



to figure out how to embed a Microsoft Word table into a Freelance Graphics presentation. The Word Help file includes some of the steps, but it doesn't have all the answers you need. So you minimize the Word Help file, switch to Freelance, and press F1. Click on the History button or press Alt-T and you'll find steps from both Help files in your History list, although only one instance of WINHELP is open. Click on any entry in the list and you'll jump right to it, even if it's located in another Help file.

Hold That Thought WINHELP also includes a useful feature that lets you add a virtual bookmark in any Help file. If you constantly use the same information—say, from a macro programming reference in Help format—mark the pages you use most often. Choose Bookmark Define from the WINHELP menu, give the listing a title, and click OK. The pointers for all Help files are stored in a file named WINHELP.BMK, found in the Windows directory. If you use this feature regularly, be sure to back up this file!

To use bookmarks that you defined previously, just pull down the Bookmark menu. The first nine entries appear on the menu; to get to the rest of them, click on More. Because WINHELP lists Bookmarks in alphabetical order, you'll probably want to use the numbers 1 through 9 to lead off the entries for the pages you go to most frequently.

You can't edit a Windows Help file directly, but you can add notes, just as you might scribble in the margin of a printed manual. These notes can be especially handy when you uncover a useful factoid that corrects a misleading Help file entry or adds crucial information. To add an annotation, click on Edit Annotate. WINHELP adds a paper-clip icon in the upper left corner of a Help topic that has been annotated. (The color of the paper-clip graphic is the same as the JumpColor entry.) To view annotations, click on the paper clip icon.

Annotations are saved in the Windows directory in separate files, each using the same filename as the accompanying Help file but with the extension ANN. So, for example, notes you keep for MAINXL.HLP are kept in a file called MAINXL.ANN. Again, if you use this feature regularly, be sure to back up your annotation files. ED BOTT

PC Contact HELP TO TEXT

SmartDoc
Frustrated that you can't convert help topics to text files? You can copy small portions to the Clipboard, but there's a better way. SmartDoc is a shareware utility that generates text files from any Help file. Download SMTDOC.ZIP from data library 3 (Utilities/Misc.) of PC Contact, or send £14.50 (that's about $21) to Oakley Data Services at 3, Oakley Close, Sandbach, Cheshire CW11, 9RQ, England. See page 228 for information on downloading from PC Contact or ordering the disk from Public Brand Software.

WIN TIPS

SIGN YOUR FAXES

Problem: *You're using a fax modem and need to add your signature to faxed letters.*

Solution: If you have access to a scanner, it's easy to capture a signature as a PCX file. No scanner? No problem. Use your fax modem to capture your John Hancock. Here's how: Sign your name on a sheet of paper, go to a friend's fax machine and send it to your fax modem. When you receive the fax, save it as a PCX file and use Windows Paintbrush or another paint program to cut the signature and paste it into its own PCX file. When you've finished a piece of correspondence and want to sign it, use your word processor to place the signature where you want it (you can even save it as a Glossary entry in Word for Windows). Send the file to your fax modem and your letter is signed, sealed, and ready to be digitally delivered.

ED BOTT
SENIOR CONTRIBUTING EDITOR

KEEP SECRETS SECRET

Problem: *You want to protect your screen from prying (novice) eyes when you load Windows.*

Solution: Load a screen saver automatically when you load Windows. Better yet, load a screen saver that you can password-protect. The screen savers that come with Windows 3.1 (except Blank Screen) include a password option, and with a little work, it's easy to load them when you start Windows. First, in a text editor such as Notepad or Sysedit, open WIN.INI and find the Programs=com exe bat pif line. Add a space and scr to the end of the line, then save the file and exit the editor. Next, open the Startup group, select File, New, Program Item, OK. At the Description line type Screen Saver and at the Command Line type C:\WINDOWS\SSSTARS.SCR /S (or

"They Can Network Me.

Make Me Interactive.

Even put Me

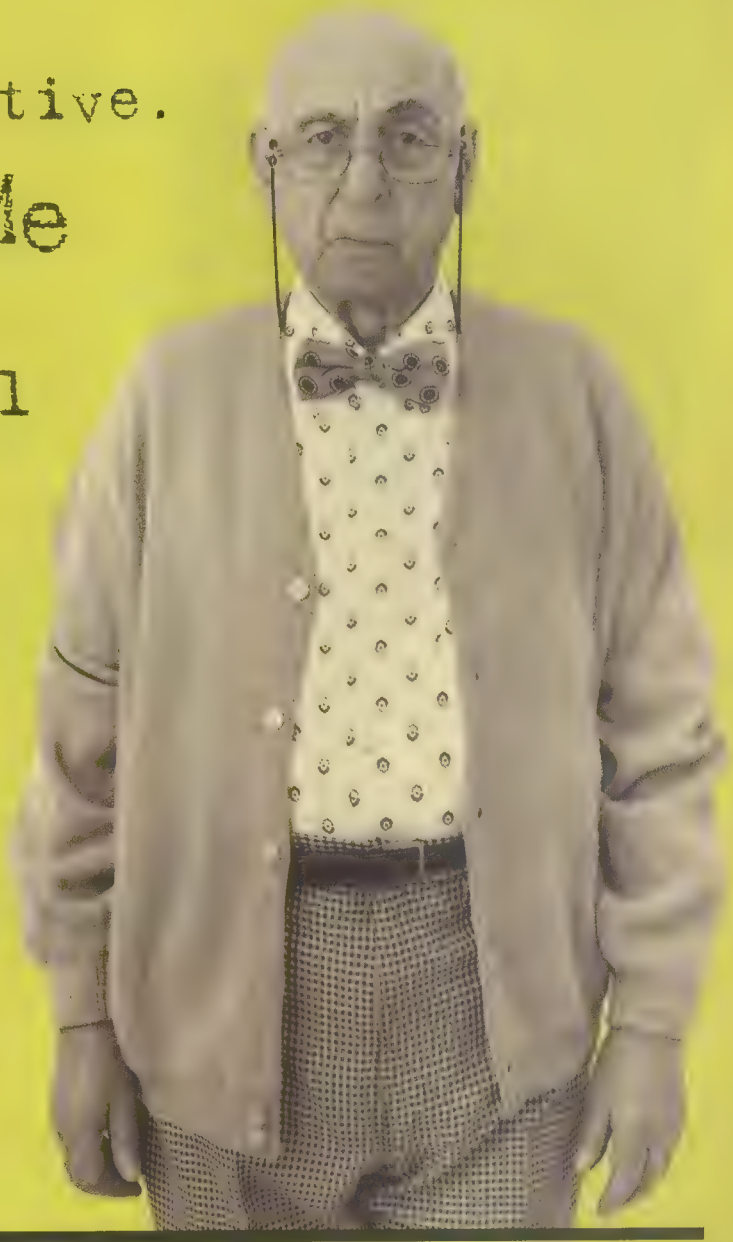
On Some Digital

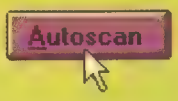
Expressway. Can't

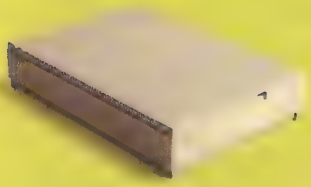
Someone just

Cure My

Scanaphobia?"







The IX-4015 Color Scanner for the PC or Mac®

Yes. Introducing the Canon® IX-4015 Color Scanner. Its remarkable Autoscan feature produces professional quality scans in just one step. And with its easy to use OFOTO® version 2 software, small footprint, and affordable price, you'll find this powerful business tool a pleasure – not a pain. Now, we could load you up with all the great technical details, but that might scare you away. Instead, just see the IX-4015 at your local Canon dealer, or call us at 1-800-848-4123. Unless of course, you have "telephobia".

Canon

FREE CATALOG!

Five Reasons To Shop Inmac For Your PC Hardware And Software

1. **Low Prices** On Every Product, Every Day.
2. **Largest Selection** Of PC Hardware And Software Available.
3. **Satisfaction Guaranteed** With Inmac's 30-Day Warranty.
4. **Fast Shipment** Call By 5 p.m. And It's Shipped The Next Day.
5. **Easy Ordering** Just Pick Up The Phone And Call Toll-Free.

CALL TOLL FREE
1-800-972-9240

Or FAX 1-800-972-3210, 24 Hours A Day

YES! Please reserve my FREE copy of the INMAC PC Select Catalog.

Your Name _____ Title _____
Company _____ # of employees at your company _____
Division/Mailstop/Suite # _____
Address _____
City _____ State _____ Zip _____
Area Code _____ Day Phone _____

Mail To: Inmac, 2465 Augustine Drive
Santa Clara, CA 95052

Priority Code S940606 **inmac**

use the filename of any other screen saver with the SCR extension except SCRNSAVE.SCR). To enable the screen saver's password protection, open the Main group, select Control Panel and then Desktop. Click on the Screen Saver button and select Starfield Simulation (or whatever screen saver you're loading in WIN.INI). Press the Setup button, check the "Password Protected" option, and select Set Password. Type a password and exit. Next time you load Windows, a dialog box prompting you for a password will be displayed.

MATTHEW LAKE
SENIOR EDITOR

NO MORE SECRETS

Problem: *Somebody configured your system with a password-protected screen saver in your absence, and you want to disable it.*

Solution: In a text editor such as EDIT in DOS 6.*x*, edit the file CONTROL.INI located in the Windows directory. Search for PWProtected=1, and change every occurrence of this line to read PWProtected=0. Next, search for [ScreenSaver] and remove that line and the one immediately below it—the one that reads Password= followed by something cryptic. Now edit WIN.INI, search for ScreenSaveActive=1 and type 0 instead of 1. The next time you load Windows, the password will be gone, and you can reconfigure the screen saver with one of your own.

YAEL LI-RON
ASSOCIATE EDITOR

DON'T TELL ME

Problem: *You're tired of reading the session instructions that Windows 3.1 provides every time you shell out to DOS.*

Solution: It's easy to remove that screen so your DOS sessions begin with a pristine C:\ prompt. Using a text editor such as Notepad, open SYSTEM.INI. In the section labeled [386Enh], add the line DOSPromptExitInstruc=no. Save your changes, then exit and restart Windows. When you shell out to DOS, the instructions will no longer clutter your screen: You'll see only Microsoft's copyright message and then the prompt.

ALISON PERRY
MADISON, WISCONSIN

SLOW DOS REMEDY

Problem: *DOS applications run slowly.*

Solution: Using a text editor such as Notepad or Sysedit, open SYSTEM.INI and go to the [386Enh] section and add the line FileSysChange=Off. In a nutshell, DOS boxes will no longer waste time keeping File Manager posted when they create, rename, or delete files. If you're running Windows in standard mode, this setting should already be turned off.

ALISON PERRY
MADISON, WISCONSIN

HOT TIP — TERMINAL

Problem: Terminal doesn't provide a phone book for numbers you call frequently.

Solution: In Terminal, select Settings and set up the parameters for the service you want to call, such as the phone number and the kind of terminal emulation, transfer protocol, and function key macros needed for logging on and navigating around. Once you've set it up, select File, Save As to save the settings in a TRM file. Give it a descriptive name so that you'll know what service is associated with the settings. Repeat this process for any other services you regularly call. From now on, you can use File, Open to call up a list of all your settings files. Load the one you want and then dial the service with your preferred settings.

—JOE SALEMI
NEW YORK, NEW YORK

The Sportster.® Now scandalously fast.

Introducing the new Sportster 28,800 bps V. Fast Class modem from U.S. Robotics.

Have you heard the news? The world's most popular modem is now one of the world's fastest -- 28,800 bps fast.

The Sportster has always been incredibly affordable. It's always been able to claim sensational quality. And, yes, it's always been unbelievably easy to use.

Now it's fast, too.

Of course, if you feel the previous version of the Sportster would be a better match for your needs, it's still available. And at discounted prices.

Either way, you can't go wrong with a Sportster. You read it here, so you know it's true.

For more information about the Sportster and what it can do for you, call 1-800-DIAL-USR.

The No.1 Selling Modem Sportster® In The World

Sportster® 1-800-DIAL-USR

USRobotics®
The Intelligent Choice in Data Communications

U.S. Robotics, Sportster and the USRobotics logo are registered trademarks of U.S. Robotics, Inc.

Circle 102 on reader service card.

NIFTY SCRIPTS THAT REVEAL HIDDEN POWERS

Get Inside the Really Undocumented DOS

If you love a secret, you probably love undocumented DOS commands and command switches. But some of them are now so popular that they've become a well-established part of DOS lore and hardly qualify for secret status anymore. A classic example is TRUENAME, which debuted in DOS 4. TRUENAME accepts a filename and displays its drive and path as well as its name, and even "sees through" aliases created by commands such as SUBST. Whether the command is useful is beside the point. The fact that it's there, and that it's undocumented, is reason enough for some users to want to know everything there is to know about it.

There is but a handful of undocumented DOS commands, and the majority of them, as it turns out, are like TRUENAME: not very useful. But there are dozens of undocumented DOS programming functions, many of which *are* useful. Programming functions are routines in the DOS kernel that programs can call upon to perform common tasks such as opening and closing files. You can't access a programming function from the command line as you can a conventional DOS command. Fortunately, you can use DEBUG to write a short intermediary program that invokes a programming function to perform an action.

The DEBUG scripts described below use undocumented DOS functions as the basis for some interesting, although slightly unusual, DOS utilities.

Disabled Drives It is occasionally desirable to "hide" certain drives from an application—such as a virus scanning program that scans every drive in your system. Or a program that attempts to read the disk in every drive named with a letter C or higher, and crashes when it comes across an empty CD-ROM drive.

It has always been possible to disable a drive by flipping bits in an undocumented DOS data structure called the Current Directory Structure (CDS). Each CDS stores information unique to the drive, such as the name of the current directory and a flag indicating whether the drive is active. DOS 5 and 6 support a pair of new, undocumented calls that permit you to disable and enable a drive with a simple function call. See "Hide Your Information," below, for how to use this pair of functions.

Print Logging Most DOS users know that pressing Ctrl-P at the DOS prompt toggles print logging on and off. With print logging on, everything that DOS normally writes to the screen—such as the output from a DIR or CHKDSK command—goes to the screen and printer. There is no documented means for a program to toggle print logging on or off, but—you guessed it—there is a way to do it. The next DEBUG script creates LOGGING.COM, which turns print logging on and off in response to a command instead of a key combination. Because it accesses an internal flag whose location in the DOS data segment varies with DOS versions, LOGGING.COM requires DOS 5 or later.

```
N LOGGING.COM
E 0100 EB 2F 53 79 6E 74 61 78
E 0108 3A 20 4C 4F 47 47 49 4E
E 0110 47 20 4F 4E 7C 4F 46 46
E 0118 0D 0A 24 52 65 71 75 69
E 0120 72 65 73 20 44 4F 53 20
E 0128 35 20 6F 72 20 36 0D 0A
E 0130 24 B4 30 CD 21 BA 1B 01
E 0138 3C 05 72 3E 3C 06 77 3A
E 0140 FC BE 81 00 AC 3C 20 74
E 0148 FB 3C 09 74 F7 BA 02 01
E 0150 3C 0D 74 26 4E AD 25 DF
E 0158 DF 3C 4F 75 1D B0 FF 80
E 0160 FC 4E 74 07 32 C0 80 FC
```

HOW TO DO IT — HIDE YOUR INFORMATION

The following DEBUG scripts are for DOS 5 or later. They create programs that use the DISABLE and ENABLE functions to temporarily disable then re-enable an active drive:

```
N DISABLE.COM
E 0100 EB 35 53 79 6E 74 61 78
E 0108 3A 20 44 49 53 41 42 4C
E 0110 45 20 64 5B 3A 5D 0D 0A
E 0118 24 49 6E 76 61 6C 69 64
E 0120 20 64 72 69 76 65 20 73
E 0128 70 65 63 69 66 69 63 61
E 0130 74 69 6F 6E 0D 0A 24 FC
E 0138 BE 81 00 AC 3C 20 74 FB
E 0140 3C 09 74 F7 BA 02 01 3C
E 0148 0D 75 09 B4 09 CD 21 B8
E 0150 01 4C CD 21 BA 19 01 24
E 0158 DF 3C 41 72 EE 3C 5A 77
E 0160 EA 8A D0 80 EA 41 B8 08
E 0168 5F CD 21 73 05 BA 19 01
E 0170 EB D9 B8 00 4C CD 21
RCX
77
W
Q
```

```
N ENABLE.COM
E 0100 EB 34 53 79 6E 74 61 78
E 0108 3A 20 45 4E 41 42 4C 45
E 0110 20 64 5B 3A 5D 0D 0A 24
E 0118 49 6E 76 61 6C 69 64 20
E 0120 64 72 69 76 65 20 73 70
E 0128 65 63 69 66 69 63 61 74
E 0130 69 6F 6E 0D 0A 24 FC BE
E 0138 81 00 AC 3C 20 74 FB 3C
E 0140 09 74 F7 BA 02 01 3C 0D
E 0148 75 09 B4 09 CD 21 B8 01
E 0150 4C CD 21 BA 18 01 24 DF
E 0158 3C 41 72 EE 3C 5A 77 EA
E 0160 8A D0 80 EA 41 B8 07 5F
E 0168 CD 21 73 05 BA 18 01 EB
E 0170 D9 B8 00 4C CD 21
RCX
76
W
Q
```

Enter these scripts into a text editor and save them as DISABLE.SCR and ENABLE.SCR, respectively. Exit and type DEBUG < DISABLE.SCR (or ENABLE.SCR) to compile the scripts. Disable and enable the H: drive by typing DISABLE H: or ENABLE H:, respectively.

This DOS is Boss.

Stacker® disk compression

Unparalleled MS Windows support

100% DOS compatibility

Competitive upgrade offer

Built-in networking

True pre-emptive multitasking

Advanced memory management

Workstation security

NOVELL

NEW LOW PRICE COMPETITIVE UPGRADE OFFER

NOVELL DOS 7

The Advanced Networking DOS That's Easy to Use

Novell DOS

KEY FEATURES	NOVELL DOS 7	MS-DOS*. 6.21
Disk compression	YES	NO
Multitasking	YES	NO
Memory management	YES	YES
Protected mode drivers	YES	NO
Workstation security	YES	NO
Backup & Antivirus	YES	YES
Built-in networking	YES	NO

*MS-DOS is a reg stered trademark of Microsoft Corporation

New low price! Take advantage of our limited-time competitive upgrade offer on Novell® DOS™ 7 – the world's most advanced, 100% DOS-compatible operating system. With more MS Windows utilities than any other DOS. Plus our exclusive space-saving Stacker disk compression. The productivity of true multitasking. Better memory management with DOS Protected Mode Services. And built-in networking. Sounds good, but you want to know more? Call us and we'll fax you a detailed competitive comparison. Better yet, why not meet The Boss right away and save money, too. See your local reseller today.

MVP FINALIST · STACKER COMPRESSION · yes NetWare

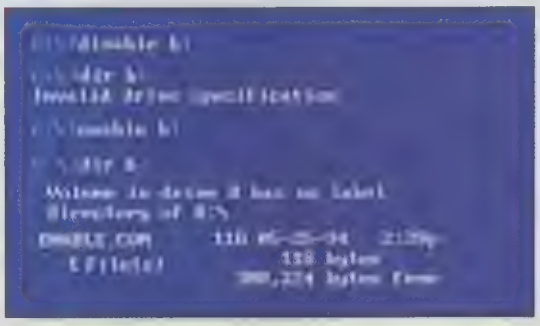
GET THE FACTS BY FAX OR CALL US AT: 1-800-NETWARE (REQUEST DOCUMENT NUMBER 9503)

NOVELL. The Past, Present, and Future of Network Computing.

Circle 123 on reader service card.

WORKAROUNDS DRIVE PROTECTION

Vanished: If your drive is invisible, it can't be accessed. Use DISABLE and ENABLE to hide drives from prying eyes or even viruses. These utilities work on floppy drives and hard disks, but not on network drives.



```
E 0168 46 75 0F 50 B4 34 CD 21
E 0170 58 26 A2 FE 02 B8 00 4C
E 0178 CD 21 B4 09 CD 21 B8 01
E 0180 4C CD 21
RCX
83
W
Q
```

Create the script as you did DISABLE.SCR (in "Hide Your Information"), but call the file LOGGING.SCR. To start or stop print logging, use LOGGING ON or LOGGING OFF, respectively, from your batch file.

Full Screen Enhanced-mode Windows does a fair job of running character-mode DOS applications in a window, but graphics-mode DOS applications sometimes present problems. FULLSCR.COM, which you can create with the following DEBUG script, is one such command. When executed in a windowed DOS session in Windows 3.0 or 3.1, FULLSCR switches the session to full screen:

```
N FULLSCR.COM
E 0100 EB 04 00 00 00 00 B8 84
E 0108 16 BB 15 00 CD 2F 0B FF
E 0110 75 06 8C C0 0B C0 74 0F
E 0118 89 3E 02 01 8C 06 04 01
E 0120 B8 01 00 FF 1E 02 01 B8
E 0128 00 4C CD 21
RCX
2C
W
Q
```

Why do you need FULLSCR when Alt-Enter achieves the same thing? If you run windowed DOS sessions and launch DOS applications from that prompt (particularly programs such as Lotus 1-2-3's Wysiwyg mode and Microsoft Flight Simulator), you're asking for trouble. Call FULLSCR from a batch file that calls those applications in turn and the problems go away.

How does it work? Much of the work that's involved in managing DOS sessions in the Windows environment falls to a virtual device driver (VxD) named DOSMGR, which supports an undocumented function call that switches the current DOS session to full screen. It is this function call that allows DOS to switch to full screen when a critical error occurs. All FULLSCR does is obtain the entry-point address for DOSMGR function calls and call the entry point with the appropriate register values. Unfortunately, there does not appear to be a function—documented or undocumented—for switching back to a windowed state. JEFF PROSISE

JEFF PROSISE is not only your DOS guru, he's the author of *Windows Desktop Utilities* (ZD Press, 1994).

PC Contact REGULAR RUNS

Torok Scheduler
Wouldn't you like your computer to automatically run a backup on Fridays? Torok Scheduler lets you do just that: Add it to your AUTOEXEC.BAT file, and it will run the programs you select when you start your computer. You can also customize the program to run regularly after a specified number of days. Download TOROK.ZIP from PC Contact's data library 3 (Utilities/Misc.), or contact Michael Torok directly at (408) 336-8625. See page 228 for information on ordering the disk from Public Brand Software.

DOS TIPS

COMMAND EXCEPTIONS

Problem: *There is no "except for" parameter for DOS commands.*

Solution: Meet NOT.BAT, a batch file that feeds exceptions to commands in DOS. To create it, go to your DOS directory, type EDIT NOT.BAT, and type the following lines:

```
@ECHO OFF
IF %1!==! GOTO SYNTAX
SET SWITCH=
IF NOT %1!==/S! IF NOT
%1!==/s! GOTO SKIP
SET SWITCH=/S
SHIFT
:SKIP
ECHO @ECHO
OFF>C:\DOS\NRESTORE.BAT
:LOOP
IF %1!==! GOTO ERROR
ATTRIB +H +R %1
%SWITCH%>NUL
ECHO C:\DOS\ATTRIB -H -R %1
%SWITCH%>>C:\DOS\N
RESTORE.BAT
SHIFT
SHIFT
IF %0!==! GOTO ERROR
FOR %%B IN (NOT Not not)
DO IF %0!==%%B! GOTO LOOP
CALL %0 %1 %2 %3 %4 %5
%6 %7 %8 %9
CALL C:\DOS\NRESTORE
GOTO END
:ERROR
ECHO **ERROR!! NOT
FOUND!!**
:SYNTAX
ECHO Correct syntax: NOT [/S]
FILESPEC1 [NOT FILESPEC2
...] COMMAND
ECHO /S= Protects files in
descendent directories from a
recursive command
SET SWITCH=
DEL C:\DOS\NRESTORE.BAT
:END
```

To save the file, press Alt-F, X, Y. Because the DOS directory is in your path, the NOT command is available from any directory or drive. Note that this batch file creates a file called NRESTORE.BAT in your DOS directory. And because NOT.BAT accepts multiple file parameters, you may issue a command such as: NOT *.EXE NOT *.COM NOT *.BAT DEL *.*

JON R. BAZINET
TEMECULA, CALIFORNIA

Introducing the Globalyst™ Family of PCs

Bringing YOU and your world together.

AT&T
Global Information Solutions

Color Notebook
$1,775

Globalyst™ PCs—Bringing Computing And Communications Together.

The Globalyst™ family of PCs is a new generation of personal computers from AT&T. They are designed to make it easy for you to take the next step forward in PC productivity: combining computing and communications.

Get, Move and Use the Information you need.

The way you work is changing rapidly. As a result, you demand more from your PC than ever before. Computing alone just isn't enough. You need to network. To work closely at a distance. And as fast as you can think. That's why we designed our Globalyst PCs with both computing and communications in mind. They come with ISA and PCI architectures and full Plug and Play capability.

GET move USE IT

Globalyst systems are pre-loaded with MS-DOS™ and Microsoft Windows™ software. Plus, PCs in this family are certified to run Novell Netware, IBM OS/2, SCO Unix, Windows for Workgroups and Windows NT.

Today that means you can count on your AT&T Globalyst PC for fast connectivity to your network and powerful data-based communications. And when you're ready, you'll be able to add voice and visual capabilities to your PC.

Today's PC for Tomorrow's Communications.

Globalyst 486 PCs are upgradable to Intel's Pentium™ Overdrive™ processor using ZIF sockets for easy upgrades. Plus they come equipped with extra plug and play expansion slots that let you enhance your PC to meet future requirements and FlashBIOS that easily upgrades you from a floppy, modem or network.

Powerful, not wasteful.

Our Energy Star power management system keeps the PC in sleep mode when not in use, whether it's a stand-alone or on the network. This system will save you energy and up to $120 a year. And all major parts and packaging are recyclable.

Ideal Blend of Power and Speed

$2,325 or $80/mo.

Globalyst™ 550

- Intel Pentium™ OverDrive™ Ready
- Intel486™ DX2/66
- 270MB Hard Drive
- 8MB RAM
- PCI Local Bus
- 61 mio. WinMark™
- 14" SVGA .28mm Monitor

Ask about our DX4/100 systems

Call AT&T Direct. The Computer Source. Get the PC that's right for you.

Whether you're buying for home or your enterprise, our sales consultants are ready to help you get the PC that's right for you today and tomorrow. Multimedia. Network additions. Bundled upgrades.

Count on AT&T for service and support.

Your system is supported by a road-ready crew of more than **5,000 AT&T Service Technicians** in over **700 locations nationwide**. Plus next business day service bringing the parts and skills to get your PC up and running. (Most AT&T PCs are covered with a **FREE three-year warranty**, including parts and labor.)

Buy the way you like.

From AT&T Direct. Including a **30-day money back guarantee.** Or through your nearest reseller. Or from a national retailer like Sears.

With AT&T, it's always easy.

Hot, New Globalyst™ Multimedia

Multimedia For Home Or Office

$1,999 or $69/mo.

Globalyst™ 515

- Intel Pentium™ OverDrive™ Ready
- Intel486™ SX2/50
- 170MB Hard Drive
- 8MB RAM
- VESA Local Bus
- 14" SVGA .28mm Monitor

Includes a complete multimedia package:

- Dual Speed Sony CD-ROM Drive
- Labtec Stereo Speakers
- Softbank™ Software
- 16-bit MediaVision Sound Card
- Pre-loaded Microsoft Works
- Compton's Multimedia Encyclopedia
- AT&T Multimedia Showcase
  Includes: Games, Clip Art, Sound Effects and Icons.

AT&T Multimedia Store

MULTIMEDIA UPGRADE KIT!

Only $315. With AT&T PC purchase. Includes 16-bit MediaVision Sound Card, Sony Dual Speed CD-ROM, Labtec Stereo Speakers, Softbank™ Software, Compton's Multimedia Encyclopedia, AT&T Multimedia Showcase. Free installation.

MULTIMEDIA PACKAGES! ONLY $45 EA.

YOUR CHOICE WITH THE PURCHASE OF ANY AT&T PC.
Get the latest and most popular multimedia software for your home or office.
Choose yours for only $45 per package:

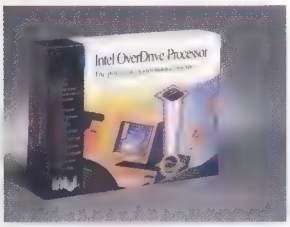
Business Productivity: Astound-Multimedia Business Studio, Sound Effects Library, InPrint Art Library 101 Scenic Photos

Business Reference: Allegro PC Library, Phone Disc USA Business, Allegro Business Reference Library

Family Discovery: Sony Dinosaurs, VideoHound, Better Homes and Gardens Cookbook

Family Entertainment: Return to Zork, Teddy's Big Day, Dr. T's Sing-Along

Special Offer!



Now available, the latest Intel486™ OverDrive processors, including SX/2! Starting from $199!

For a limited time receive a free Soundblaster™ card with every OverDrive purchase!

CALL: *AT&T Direct*
The Computer Source

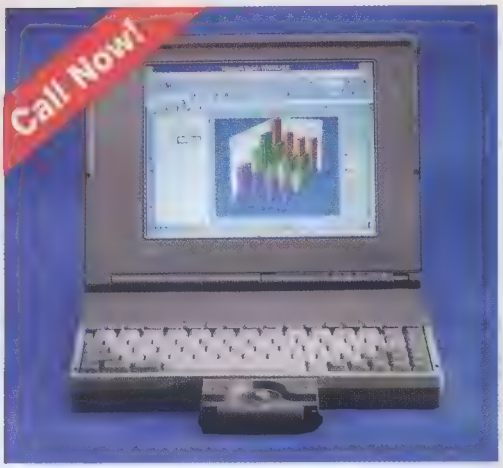
1-800-509-9606

Hours: 8-8, M-F; 10-6, Sat. (EDT)

For a Reseller near you:
1-800-624-7187

Now serving Canada!
Call for prices. Financing options may vary.

Color Notebook Special $1,775



Safari 3150 For Your Own Superhighway

$1,775 Passive Color
$2,375 Active Color

Complete package for the road warrior!
100% performance at the office or on the road!

- Intel486™ SX/25
- 170MB Removable Hard Drive
- 3.5" 1.44MB Internal Floppy Drive
- 4MB RAM (upgradable to 20MB)
- 9.5" DS Passive Color Screen
- Pre-loaded Software: MS-DOS, Windows, Tourguide, Bitfax, AT&T Mail

Performance On A Budget
System 3230

$1,385 or $48/mo.

- Intel Pentium™ OverDrive™ Upgradable
- Intel486™ SX/33
- 170MB Hard Drive
- 4MB RAM
- VESA Local Bus Video
- 14" SVGA .39mm Monitor

Add an Ethernet network card for only $120

Business Workhorse
System 3333

$2,065 or $71/mo.

- Intel Pentium™ OverDrive™ Upgradable
- Intel486™ SX/33
- 2 VESA Expansion Slots/4 ISA Slots
- 270MB Hard Drive
- 8MB RAM
- Complete with:
  Word Perfect™ and FREE Quattro Pro™
- 14" SVGA .28mm Monitor

Business Powerhouse
System 3333 Server

$2,995 or $103/mo.

- Intel Pentium™ OverDrive™ Upgradable
- Intel486™ DX2/66
- 2 VESA Expansion Slots/4 ISA Slots
- 520MB Hard Drive
- 16MB RAM
- Network Adapter Card (10Base2 or 10BaseT)
- 256KB Write-back Cache
- 14" SVGA .39mm Monitor

AT&T Direct The Computer Source **1-800-509-9606**

intel inside

AT&T Global Information Solutions

MICROSOFT WINDOWS READY-TO-RUN

AT&T and the AT&T globe design are registered service marks and trademarks of American Telephone and Telegraph Company. Globalyst is a trademark of AT&T Global Information Solutions Company. The Intel Inside logo, Intel486 and Pentium are trademarks of the Intel Corporation. MS-DOS and Windows are trademarks of the Microsoft Corporation. All other trademarks acknowledged. Prices, configurations and availability subject to change without notice. Prices and money back guarantee do not include shipping. Shipping charges are calculated according to weight and distance. Appropriate sales tax will be added. AT&T Global Information Solutions is not responsible for errors in typography or photography.
© July, 1994 AT&T Global Information Solutions.

BATCH DEBUGGING

Problem: *Your batch files keep crashing and you don't know why.*

Solution: MS-DOS 6.2 introduced a batch-file debugging utility: COMMAND /Y/C. To troubleshoot your batch files, create a DOSKEY macro by adding the following line to your AUTOEXEC.BAT file:

```
LH DOSKEY BD=COMMAND
/Y/C $1$2
```

If your system is a 286 or earlier, omit the LH. This macro (BD stands for batch debugger) expects two arguments: the batch filename and its argument. If you have a batch file called WHERES.BAT, you can troubleshoot it by typing BD WHERES *.TXT. Press Y on each line prompt, until you come across the line with the error.

Steve Marston
Glen Oaks, New York

COMPLETE DELETE

Problem: *Deleting hidden, system, and/or read-only files requires an extra step of resetting the file attributes with* **ATTRIB.**

Solution: The DELTREE command in MS-DOS 6.*x* removes more than just directories. It deletes all files and subdirectories in the directory, regardless of their attributes. By typing DELTREE *filename*, you're "tricking" it into treating a filename as a directory. DELTREE will prompt you to confirm the deletion. If you don't want to be prompted for the deletion, add the /Y switch: DELTREE /Y *filename*.

Ken Johnson
Oak Park, Illinois

SYNCHRONIZE FILES

Problem: *You need to synchronize files between two disks or directories.*

Solution: In a text editor such as EDIT, create the following batch file and name it SYNC.BAT:

```
@ECHO off
ECHO Wait...
IF %1!==! GOTO MISSING
IF %2!==! GOTO MISSING
REPLACE %1*.* %2 /A
REPLACE %2*.* %1 /A
REPLACE %1*.* %2 /U
REPLACE %2*.* %1 /U
CLS
ECHO Source and Target are
synchronized!
GOTO END
:MISSING
ECHO Syntax: SYNC [source path]
[target path]
:END
```

This batch file uses the REPLACE command to "fill in" missing files from the source to the target and vice versa, and then updates older versions of files on either path. Note: This procedure does not work on subdirectories, only specified paths. Examples: SYNC A:\ B:\ and SYNC C:\TEMP\ D:\BIN\.

S. G. Hubert
Lahaina, Hawaii

DOS, DOS, OR DOS?

Problem: *You need a way to tell whether you're running Novell DOS, MS-DOS, or IBM's PC DOS.*

Solution: Novell DOS and the old DR DOS both support commands not available in MS-DOS or PC DOS, so batch files you write for them may not run under these DOS versions. With ISNVLDOS.COM, your batch files can figure out which operating system they're running under so you can use Novell DOS's features when they're available. Enter these lines in a text editor and save the file as ISNVLDOS.SCR:

```
N ISNVLDOS.COM
E 0100 B8 52 44 F9 CD 21 73 02
E 0108 32 C0 B4 4C CD 21
RCX
0E
W
Q
```

To generate this file, simply type

```
DEBUG < ISNVLDOS.SCR
```

ISNVLDOS returns a zero if the operating system is MS-DOS or PC DOS. If ISNVLDOS doesn't return a zero, the return code identifies the Novell DOS version number. A return code of 101 (65h in hexadecimal) identifies Version 5.0; 103 (67h in hex) means Version 6.0; and 114 (72h in hex) means Novell DOS 7. With this knowledge, you should be able to use DOS's ERRORLEVEL variable in a batch file to determine which DOS you have.

Jeff Prosise
Contributing Editor

HOT TIP — PASSWORD-PROTECTED SCREEN SAVER

Problem: You want to protect your system against office snoops.

Solution: Here's a password-protected screen saver to baffle even the sophisticated users in your office. The password we use in this example is a combination of an ASCII code and a case-sensitive letter: ±A. Press Alt and tap 241 on the numeric keypad to generate the ± symbol. Even Ctrl-C doesn't terminate this batch file's execution. To create the file, type EDIT LOCK.BAT and enter the following lines:

```
@echo off
cls
echo ←[13;8p←[8m←[5m←[14;35H←[sPassword?
echo ←[15B
CHOICE /C:±/S>NUL
CHOICE /C:A/S>NUL
ECHO ←[0m←[13;13p
cls
```

The ← symbol indicates an escape code. To generate it, press Ctrl-P followed by Esc. If you want to change the password, replace the ± and the A in the CHOICE lines, respectively, with your selection. To make the password longer, add similar CHOICE lines. Note: This batch file works only in DOS 6 or later, and you'll have to load ANSI.SYS.

—Joe McElroy
Mifflinburg, Pennsylvania

USE A WORD PROCESSOR FOR SOME DTP

Desktop Publishing for the Rest of Us

Congratulations—you've been promoted! Part of your new job is producing a monthly newsletter and an annual employee handbook. But before you tear open the FrameMaker or PageMaker or QuarkXPress box, stop and consider the direction you're taking. Are you going to use the program on a full-time basis? How many hours a month do you plan to allocate for these projects? And did you plan to maintain any type of personal life?

Loosely defined, desktop publishing (DTP) is the art of electronic text layout, which, done right, should follow strict style guidelines. Traditionally, this type of computer application used to be exclusively associated with the Macintosh. Thanks to improved PC hardware and software (namely the graphical potential explored by the Windows environment), the distinction between these two platforms is fast disappearing.

If you only do occasional DTP, there's no real need to master these complex programs. You can, in all likelihood, do it all using your favorite word processor. Microsoft Word for Windows, WordPerfect for Windows, and Lotus Ami Pro all offer most of the layout tools you need: Column formatting, landscape printing, tables, borders, and font and graphics support. Both Word and WordPerfect include text manipulation modules (WordArt in Word and TextArt in WordPerfect) allowing you to curve and tilt your words, give them drop-shadow effects, fill patterns, and so on.

In fact, if you primarily produce technical manuals, you're safer with a powerful word processor. In addition to superior text-editing tools (most DTP programs are awkward to edit in), a word processor provides equation editors, footnotes, table of contents generators, and indexing functions.

Have Fun The advantage of using your word processor as a DTP program is obvious: There's nothing new to buy or learn. But for the easiest results, not to mention sheer fun (yes, it *is* possible to enjoy desktop publishing), try Microsoft Publisher. This hot seller offers design Wizards that perform all the layout magic you need in an easy-to-follow, interactive mode. Sure, it doesn't offer the color separation tools necessary for producing *PC Computing*, nor does it have sophisticated letter spacing, but the good news is that you don't even have to know what letter spacing is all about!

Easy as it may seem to the uninitiated, DTP is a science. Strict rules apply, and you should follow them carefully to avoid embarrassing yourself. Here are a few important guidelines for producing professional-looking documents:

- Unless you want the "ransom note" effect, don't mix and match too many fonts and sizes on one page.
- Let go of the old typewriter habits: TOO MUCH UPPERCASE TEXT or too many underlined words are clear indications that you haven't mastered the fine art of italics and boldface.
- Don't overcrowd the page. Leave some white space in strategic locations, such as below the headline and at the margins.
- Avoid using too many boxes on a page.
- To set off a block of text, try a screen (gray shade or even color) instead of a box.
- Select colors carefully for aesthetic balance and visual effect.

In short, simply throwing text onto a page and lacing it with graphics by no means constitutes DTP. Before you produce an amateur newsletter, pick up Roger C. Parker's *Looking Good in Print* (1994), $24.95, or *The Makeover Book* (1989), $17.95, both by Ventana Press, for more dos and don'ts.

If four-color printing isn't within your budget, call Paper Direct at (800) 272-7377. They offer preprinted paper in colors and patterns that elevate regular laser printer output to a work of art, plus a selection of layout templates on disk. YAEL LI-RON

TIPS WORD PROCESSORS

WORD 6.0 FOR WINDOWS

Problem: *You always want to launch Microsoft Word with the last document you were working on.*

Solution: Use the following macro to do just that:

```
Sub MAIN
FileList 1
End Sub
```

To create it, select Tools, Macros, type AutoExec for the name, and select Create. Type FileList 1 and press Ctrl-W to save and exit. Since this is simply an AutoExec macro, it will automatically execute whenever you launch Word.

S.G. HUBERT
LAHAINA, HAWAII

WORDPERFECT FOR WINDOWS

Problem: *You're creating a mail merge and you don't want to make a new file when converting data from your colleagues' word processors.*

Solution: Use a common Ami Pro, Word, or ASCII data file on the network. Instead of selecting Create Data File when creating a merge document, click on Form to create a form file. To do this, go to the Create Form File dialog box and click on the file icon to the right of the input box under Associate a Data File. Under List Files of Type, select All Files (*.*), select the common file on the network, then click OK.

After you've created the form, when you're ready to add a field, click on the Insert Field button on the Merge toolbar. When WordPerfect interrupts you with a Convert File Format dialog box, choose the appropriate format. This way WordPerfect

All trademarks are the property of their respective owners.
Copyright © Spectrum Signal Processing Inc. All rights reserved.

How To Equip Your Office In One Easy Installment.

Order Envoy™ from Spectrum. From within Windows,™ it effectively manages all your office communications—the telephone, the fax, the modem, even voice and audio. And yet you'll still find it remarkably affordable. To get one for your office, simply dial our toll-free number. You'll be better equipped in no time at all. (800) 667-0018

Circle 158 on reader service card.

will make the data WordPerfect-for-Windows–friendly without hogging a lot of disk space.

WordPerfect Technical Support

Problem: *Selecting a font and changing its size requires many WordPerfect keystrokes and mouse clicks.*

Solution: The following macro will simplify the job by displaying the Font dialog box and calling up the font list:

```
DLGINPUT(On!)
FontDlg
Type ("1")
While (?DialogControl<>Y)
    LOOK(key)
    Type (NTOC(key))
ENDWHILE
EnterKey
```

Click on a font from the list and the macro calls up the Font Size list.

Gordon McComb
Oceanside, California

WORDPERFECT 5.2 FOR WINDOWS

Problem: *WordPerfect 5.2 lacks a clean way to create section heads that stay with the text that follows, even if there's a page break.*

Solution: Combine the Conditional End of Page command with the Styles feature to create section headers that stick with following text. Choose Alt-F8 to bring up the Styles dialog box. Click on Create and type A-Head in the Name field of the Style Properties dialog box, and Level 1 Head in the Description field. Click OK and you'll bring up the Style Editor.

Select Layout, Page, and Conditional End of Page from the drop-down menus. In the dialog box, indicate the number of lines you want to follow the heading before it jumps to the second page (typically at least four) and click on OK. In the Reveal Codes box, note that WordPerfect places the CEOP code before the [Comment] code. Press Enter to insert a hard return before the [Comment]. Add formatting for the heading (bold, font, point size) around the [Comment] code, choose Ctrl-F4 to exit, and click on Close to close the Style Editor.

To insert the breaking heading, highlight the appropriate text, choose Alt-F8 and double-click on A-Head. If fewer than four lines follow the heading, the entire section will start on the next page.

William J. Wolfe
Champaign, Illinois

WORDPERFECT 5.1 FOR DOS

Problem: *Whether you like it or not, tables always get a double border, and you constantly have to change them to your preferred border style.*

Solution: Set a default border: Press Shift-F1, and select Initial Settings, Initial Codes. In the Initial Codes screen, press Shift-F8, select Other, Border Options, Double. Press Enter on Width and Shading, and type 0 for Spacing Between. Press F7 twice to exit the Setup menu. Next time you create a table, it will display with a double border, but when you preview or print it, the line will be single. Note that this default will apply to graphic boxes as well, so if you use double borders for figure boxes, you'll need to change the border type manually each time.

Norma Aiello
Santa Fe, New Mexico

TIPS SPREADSHEETS

LOTUS 1-2-3 FOR DOS

Problem: *You're four levels down in the 1-2-3 menu maze and you need a quick way out.*

Solution: The Lotus manuals have always told you to press Esc once for each level you wish to exit, but there's an easier way: Press Ctrl-Break, which gets you clear out of the menu system back to the Ready mode.

Mark Colen
Aptos, California

QUATTRO PRO 5.0 FOR WINDOWS

Problem: *You don't want Quattro Pro to autoload a file when it starts.*

Solution: By default, Quattro Pro looks for the file QUATTRO.WB1 to autoload when it starts. If you don't want to open any file—not even a blank notebook—when you start Quattro Pro, create a startup macro that closes the file as soon as it runs. To create that macro, type {FileClose} in cell A1, then select Block, Name, Create, and name it \0

HOT TIP WORD 6.0 FOR WINDOWS

Problem: You want to launch an application such as your encyclopedia from within Word without switching to Program Manager.

Solution: Add a button to your toolbar that launches the program you need. Create a one-line macro with

```
Shell "c:\path\program.exe c:\path\file.doc"
```

between the Sub Main and End Sub lines. Replace c:\path\program.exe with the program you want to launch and c:\path\file.doc with the file you want to load at startup. For instance, to load the original Microsoft Multimedia CD viewer along with the Encarta encyclopedia, type:

```
Shell "c:\viewer\viewer.exe e:\books\encyc92.mvb"
```

Right mouse click on the toolbar and select Customize from the menu. On the Toolbars tab, scroll down the Categories list and highlight Macros. In the resulting list of macros, highlight your macro's name, drag it to the toolbar, and choose a button from the Custom Button list. Click on Assign and you're off. Next time you need the application, click on the button and it'll launch the application with any file you specified.

—WOODY LEONHARD
CONTRIBUTING EDITOR

PLUG INTO

PC Best

SUPRA'S NEW FAST CLASS 28,800 BPS

Plug into Supra for price and performance.

Plug into state-of-the-art technology — the revolutionary new SupraFAXModem 288 moves data at a blazing 28,800 bps, offering the fastest speeds ever! With error-free compression throughput can be as high as 115,000 bps!

Plug into value — SupraFAXModems are worlds ahead of similarly-priced modems. You'll get more features you can depend on, without spending more money.

Plug into dependability — each SupraFAXModem comes complete with cables, top-rated software, easy-to-read manuals, a generous five-year warranty and free support!

So go ahead. Plug into performance, dependability and value. Plug into Supra today!

For instant information, call Supra's FaxBack system at: 503-967-0072

Supra Corporation

For a Free Modem Catalog, or a Reseller near you: 1-800-285-8772

PRODUCT	PC	DESCRIPTION
[illegible]	[illegible]	[illegible]
[illegible]	$339.95	[illegible]
[illegible]	$139.95	[illegible]
[illegible]	$149.95	[illegible]

[illegible]	[illegible]	[illegible]
SupraFAXModem V.32bis	$229.95	External 14,400 bps data & fax with display
SupraCOMcard 144	$349.95	PCMCIA 14,400 bps data & fax
SupraFAXModem 288i	$269.95	Top-of-the-line internal 28,800 bps data & 14,400 bps fax
[illegible]	$349.95	[illegible]

[illegible] SUPRA DRIVE SW • [illegible] • PHONE [illegible] • [illegible] GmbH • CARL-FRIEDRICH-GA[illegible]

Circle 137 on reader service card.

(the autoexec macro name). Save the file as QUATTRO (the WB1 extension will be added automatically).

BORLAND INTERNATIONAL TECHNICAL SUPPORT

Problem: *You need to apply the same formatting attributes to several notebooks at a time.*

Solution: Click on the first notebook tab you wish to edit, then Shift-click on the last one. Note that the group is marked with a line under the tabs. Select F12 (Properties), and apply the formatting you like. Note that unlike every other section of Quattro Pro, clicking on the right-mouse button while the group is selected does *not* bring up the appropriate Properties pop-up menu.

JOSHUA LUBOSHITZ
EL PASO, TEXAS

QUATTRO PRO FOR DOS

Problem: *You can't tell what the cryptic Printer Setup Strings mean.*

Solution: If you print a lot of character-mode reports (not to the graphic printer, which downloads fonts), you must have used some Setup Strings for condensing print or setting a different paper size. These strings always start with \027 (the escape code), followed by a nonsensical line of other codes. The specific codes are listed in your printer manual, but if it's been a while since you wrote that setup string, you may not remember what any of it means. There's an easy solution which most people overlook. You can document your Setup String by adding identifying text to it. For example, for IBM Proprinter emulation, type the following setup string in the first cell of the first row in a print block:

```
\027\058\027\048 (IBM mode, 8↲
↳lpi, 12 cpi) \024
```

The identifying text (in the parentheses) won't print because of the "clear data" code, \024, that follows it. If you omit the \024, that text will print at the beginning of your print block.

DAVE MUNROE
MONTGOMERY, OHIO

LOTUS 1-2-3 FOR WINDOWS

Problem: *You want to include your spreadsheet's filename in the printout.*

Solution: Type the following formula anywhere in the worksheet:

```
@REPLACE(@CELL("filename"↲
↳,A1),0,@LENGTH(@INFO↲
↳("directory")),"")
```

(Substitute your own filename and directory in the formula.) The filename will now appear in that cell.

SHANE DEVENSHIRE
WALNUT CREEK, CALIFORNIA

MICROSOFT EXCEL 4.0

Problem: *The COUNT function in Excel returns the number of cells containing values, not labels.*

Solution: Let's say the range you want to count is C8:C197. Type the following formula where you want to display the count and press Ctrl-Shift-Enter to enter it as an array:

```
=SUM((IF(ISERROR(CODE↲
↳(C8:C197)),0,CODE(C8:C197))↲
↳>64)*(IF(ISERROR(CODE↲
↳(C8:C197)),0,CODE(C8:C197))↲
↳<123))
```

Any blank cells or cells containing values will be ignored.

DAVID HAGER
BATON ROUGE, LOUISIANA

TIPS DATABASES

MICROSOFT ACCESS 1.1

Problem: *Access creates a single MDB file that contains data as well as forms, reports, and so on.*

Solution: If you distribute application upgrades to users, every new MDB will overwrite their existing data. To avoid this, set up your application in two database files, one for tables and another for forms, reports, and modules. To link the databases, select File, Attach Table. When you distribute the application, don't include the database that holds the tables. At the receiving end, the user should update the link with File, Attach Table.

CHARLES M. OLSEN
DICKINSON, TEXAS

Problem: *You want to assign serial numbers to your records in a report.*

Solution: Create an Unbound Text Box at the left margin of the detail area. Select View, Properties, and type =1 in the Control Source box of the Properties menu. Click on the down arrow button next to the Running Sum box and select Over All. If the report is grouped, select Over Group, and the running numbers will reset for each group.

GWYNNE CORDOVA
EVANSVILLE, INDIANA

dBASE IV

Problem: *Every time you modify the database structure, you need to change memory variables declared in your program and recompile the program.*

Solution: Declaring a variable as "*name* = SPACE(35)" in a data entry program may work against you if you increase the width of the NAME field in the database file. Instead, use the "phantom" record—the empty record always present at the end of the

HOT TIP MICROSOFT EXCEL 5.0

Problem: You need to count the number of times a certain label appears within a range.

Solution: First name the range from which you need to extract this data. Then block the range and select Insert, Name, Define, type DATA, and press Enter. Now create a column of entries, containing all the labels you wish to count. If the column starts in cell B7, type the following formula in cell C7:

```
=SUM((DATA=B7)*1)
```

Press Ctrl-Shift-Enter to enter it as an array formula. To copy the formula down, drag the fill handle to the bottom of the range and press Enter.

—SHANE DEVENSHIRE
WALNUT CREEK, CALIFORNIA

Awesome monitor. Killer price.

VisionMaster 17"
ONLY
$799
MSRP

Three "plus" year warranty. 1280 x 1024 at 80 Hz. EnergyStar. Only VisionMaster packs $1,395 worth of performance into a $799 monitor.

This is a monitor to write home about. Every high-performance feature at an unheard of price—backed by the most aggressive warranty in the business. The new VisionMaster 17" FST.

3+ YEAR WARRANTY

It's all here. Precision .26 dot pitch and incredibly fast 80 Hz vertical refresh for crystal clear, flicker-free images. Microprocessor control to eliminate image distortion. An anti-glare coating to relieve eye strain. A base three year warranty that can be extended to five years. MPR II low-radiation certification. And a unique "power-off" energy conservation system that makes any PC that uses it EnergyStar compliant.

Compare these features. Compare our "three plus" warranty. No monitor beats the 17" VisionMaster for value and performance. Call today—they'll be going fast.

For more information or the reseller nearest you, call today at 1-800-394-4335.

VISIONMASTER™

IDEK Iiyama

Iiyama North America, Inc.
650 Louis Drive, Warminster, PA 18974
Outside the U.S., call 215-957-6543
Fax: 215-957-6551

* Three year warranty on parts and labor when purchased through an authorized reseller.
Windows is a registered trademark of Microsoft Corporation.
VisionMaster is a trademark and product of Iiyama North America.
©1994 Iiyama North America

Circle 179 on reader service card.

No monitor beats the 17" VisionMaster

	VISIONMASTER MF-8617	VIEWSONIC 17	VIEWSONIC 17G	NEC 5FGE	NEC 5FGP
SCREEN SIZE	17"FST	17"FST	17"FST	17"FST	17"FST
DOT PITCH	.26mm	.28mm	.28mm	.28mm	.28mm
MAX RESOLUTION	1280 x 1024	1280 x 1024	1280 x 1024	1024x 768	1280 x 1024
MAX. REFRESH @ 1280 x 1024	80Hz	76Hz	60Hz	N/A	76Hz
COLOR MATCHING	YES	YES	YES	NO	YES
POWER SAVING	YES	NO	YES	NO	YES
WARRANTY PARTS/LABOR	3YRS/3YRS	3YRS/1YR	3YRS/1YR	3YRS/3YRS	3YRS/3YRS
EXTENDED WARRANTY	YES 2 YEARS	NO	NO	NO	NO
PRICE	$799	$1199	$999	$1155	$1455

database—to get the characteristics of the field represented by a memory variable. The phantom record is accessible when EOF() is true. Go to the bottom of the file and perform a SKIP:

```
USE Student
GO BOTTOM
SKIP IIF(EOF(),0,1)
name = Student->name
```

If the database has no records, EOF() will be true after the GO BOTTOM command, and issuing a SKIP will result in an "End of File Encountered."

ROGER W. SAUER
FAIRFIELD, CALIFORNIA

Problem: *Creating or removing directories from within a dBASE program with the ! command disturbs the display, resulting in partial DOS screens.*

Solution: For a cleaner solution, call up the following BIN files from within your program. To create them, use MODIFY COMMAND or another text editor, and save the first as MKDIR.SCR and the second as RMDIR.SCR:

```
N MKDIR.BIN
E 0100 B4 39 89 DA CD 21 72 04
E 0108 B4 59 88 27 CB
R CX
D
W
Q

N RMDIR.BIN
E 0100 B4 3A 89 DA CD 21 72 04
E 0108 B4 59 88 27 CB
R CX
D
W
Q
```

MKDIR tries to create the directory whose name you've placed into a variable. If successful, it replaces the first character of the variable with a value of Y. RMDIR does the same when it deletes the specified directory. Here's an example of MKDIR's usage:

```
LOAD MKDIR
DIR_NAME = "C:\TEST_DIR"
CALL MKDIR WITH DIR_NAME
IF LEFT(DIR_NAME,1) = "Y"
DIR_NAME = "C:\TEST_DIR"
ELSE
? "Unable to create directory — ↵
↳ directory may already exist"
ENDIF
RELEASE MODULE MKDIR
```

ROGER W. SAUER
FAIRFIELD, CALIFORNIA

TIPS DESKTOP PUBLISHING

QUARKXPRESS 3.12 FOR WINDOWS

Problem: *Recreating a master page in a new document is time-consuming.*

Solution: Copy a master page from one document to another. Here's how: Create two new documents. Reduce both documents to thumbnail views by selecting View, Thumbnail for both. Now drag a page from the first document to the second—the master page from the first document comes along for the ride. In the second document, delete the copied page by selecting Page, Delete and typing the number of the copied page. While this deletes the copied page, its master page remains in the second document.

BOB WEIBEL
ASHLAND, OREGON

Problem: *Colleagues complain when you reset the preferences on the office's DTP system to accommodate your own needs.*

Solution: Swap your preferences with the default values each time you use QuarkXPress. In Windows' File Manager, copy the file XPRESS.PRF in the XPRESS directory to a file called DEFAULT.PRF. Start QuarkXPress, make changes to your tracking and kerning tables, then add any special items to your hyphenation and justification settings. Exit QuarkXPress and return to File Manager. Copy XPRESS.PRF to MY.PRF and DEFAULT.PRF back to XPRESS.PRF. Swap these configurations before you start and after you finish using QuarkXPress—you'll keep working the way you prefer without upsetting your colleagues' configurations.

BOB WEIBEL
ASHLAND, OREGON

Problem: *Selecting Fit in Window on a VGA display centers only the left page of a two-page spread.*

Solution: Fit the whole spread onscreen by holding down the Ctrl key while selecting Fit in Window. QuarkXPress displays a reduced view extending to the width of the Pasteboard. If you don't need the Pasteboard, increase the size of the view by entering zero percent in the Pasteboard Width field of the Application Preferences dialog box.

BOB WEIBEL
ASHLAND, OREGON

HOT TIP MICROSOFT PUBLISHER 2.0

Problem: Once you create text in WordArt, there's no easy way to edit it.

Solution: After using WordArt's drop-shadow, fill-pattern, curve, and rotation features, edit your creation in Microsoft Draw. First, create a WordArt frame and add all the special effects you want. Select the frame by clicking outside the frame and then single-clicking on it. Handlebars indicate that the frame is selected. Press Ctrl-C to copy the contents of the frame to the Clipboard.

Next, select Edit, Insert Object, highlight Microsoft Draw, and click OK. In the maximized Draw screen, press Ctrl-V to paste the text. The entire text is selected as one object, so click outside the block to deselect it. Now you can edit each letter or drop shadow as a separate object. Click once on each object, and resize, repaint, or move it. Double-click on an object to crop and completely modify its shape.

Exit Draw and click on Yes to Update "Untitled." This returns you to an updated WordArt frame back in Publisher. Note: The text frame is no longer a WordArt object, but is now a Draw object in WordArt. Since Draw is an OLE application, double-click on this object to launch Draw.

—YAEL LI-RON
ASSOCIATE EDITOR

Announcing OCR that's so accurate, anything else is simply pointless.

Introducing OmniPage Professional 5.0 from Caere, the leader in OCR.

We'd like to make our point perfectly clear.

OmniPage Professional sets the standard in OCR. Offering more accuracy, more power, and more flexibility than ever before.

In fact, it offers the most advanced OCR technologies in the industry—technologies that Caere has pioneered.

Only Professional helps you spend more time using scanned information instead of correcting it. Its breakthrough 3D OCR™ feature recognizes grayscale information during document scanning to greatly improve recognition of poor quality documents.

That's not all. Professional recognizes a broader range of documents, reading the most difficult characters and symbols with ease. A feat made possible thanks to its exclusive Language Analyst,™ neural network and fax recognition capabilities.

Professional also scans and saves text and embedded graphics in the original format with its breakthrough True Page™ feature. Plus, it allows you to easily edit both text and graphics with a WYSIWYG Text Editor and 24-bit color image editor.

For maximum ease of use and flexibility, there's even a new click-and-choose interface.

So get OmniPage Professional 5.0 for your PC today. See your local Caere dealer or call for more information on the complete family of OmniPage products at 1-800-535-SCAN. If you own a competitive product, ask about our "Step up to OmniPage" program.

For superior performance, it's your best shot.

omniPAGE PROFESSIONAL

caere

For Your Information.

Circle 261 on reader service card.

Caere and OmniPage are registered trademarks of Caere Corporation. The Caere logo, True Page, and Language Analyst are trademarks of Caere Corporation. All other trademarks are of their respective companies. © 1994. All rights reserved.

TAKE THE GUESSWORK OUT OF BUYING A SERVER

Heresy or Fact: You Don't Need a Pentium

It's a pleasant Tuesday afternoon. You're standing by the office water cooler, relaxing and sipping. The boss approaches with a small smile. Uh-oh. "Hey [insert your name here]. You know something about networks, right?" How much of your salary depends on this answer? "Um, kind of." Couldn't be that hard. "Great! We need to add a new server. By next Monday. You're not too busy, are you?" Why yes, in fact, you are. "Uh, no. No problem."

Necessity is the mother of network managers. What do you do now? Well, first and foremost, don't rush out and buy the biggest, baddest Pentium server you can find: It's definitely possible to run 25 or even 50 users on a 33MHz 386. Before resigning yourself to buying a new server, try a few of our tricks. If they're not enough, follow our advice for building a server from scratch.

I/O, I/O When it comes to server CPUs, bigger isn't necessarily better. That's because Novell NetWare's bottleneck pecking order runs something like this: disk drive, network interface card, CPU. That is, the first bottleneck is caused by a slow disk drive, the second by too few network interface cards. Then and only then can you point the finger at the CPU. Here's how to get around those bottlenecks.

• Add memory. Except for the 4MB that NetWare uses, every scrap of memory in your server goes to a disk cache. You can pull data out of a cache hundreds of times faster than you can pull it off the disk.

How much cache is enough? Depends on who you ask. If you follow the guidelines in the NetWare manual, you'll have 8MB of RAM for a system with 500MB of disk space. Here's what we think: RAM is probably the cheapest, easiest upgrade you can get, so find a deal on SIMMs and double whatever Novell's formula recommends.

• Stripe two disk drives. If you find that adding memory doesn't do much for performance, you may be filling the cache. Drive striping makes two drives appear as one, and it interleaves the sectors of the first disk drive with the sectors of the second so you get higher performance.

• Add a network interface card (NIC). If you have only 8 or 10 users, skip to the next paragraph. If the number is somewhere around 20 users—particularly with Ethernet—think about adding another NIC and dividing the load between the two. Reducing the load on any one segment will boost throughput at both the network wire level and at the server level.

• Tune the server? Good luck. Before NetWare 3.0, you could fiddle and tweak all sorts of things to boost a server's performance. Ah, those were the good old days of job security. Now NetWare does a lot of tweaking by itself. Most of what you can tune doesn't affect the server's performance all that much. If you play around with the data block size (it ranges from 4K to 64K) you may see a performance boost, but the larger you make the blocks, the more space you'll waste if you deal with small files.

• Add another disk controller? Don't bother. No matter how hard you try, adding a second disk controller to a system—even a heavily loaded one—won't boost performance that much. Save your money, unless you want to scrap your current controller and bring in a caching one. But more on that later.

Server from Scratch So none of that worked, eh? The boss still wants a new server? Same here. Don't worry, you haven't read this far for nothing: Everything we just laid out applies doubly to new servers. Here's what else you need to know to equip a new server.

• Hold off on that Pentium purchase. You just don't need one: Tests at ZD Labs have shown that a 66MHz 486 will support 120 clients very, very comfortably. Heck, a 33MHz 486 came in only about 2 percent slower than the 66MHz 486.

I'm a curious sort, so I called around to several of the major server vendors, and I asked them to outfit two servers: one with a 66MHz 486, the other with a Pentium/60. Everything else was the same. The price difference between the two types of systems would buy you another 16MB of RAM or another gigabyte of disk space, and still leave you with some cash (see "A Pentium Equals

BEST BUY A PENTIUM EQUALS 16MB OF RAM

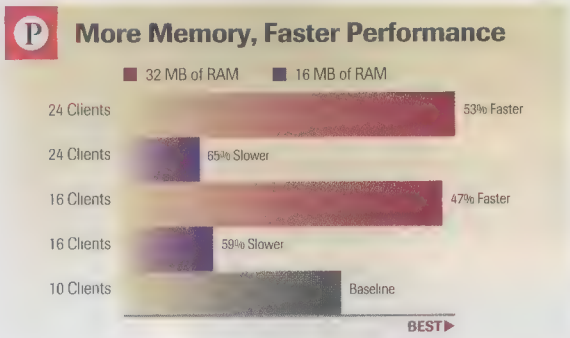
Vendor	60MHz Pentium with 16MB of RAM	66MHz 486 with 32MB of RAM	486 Price Advantage
Compaq	$8,200	$7,800	$400
Dell	$7,600	$7,300	$300

Pentium vs. RAM? When you're talking bang for the buck in a file server, the answer is RAM. We configured two nearly identical systems (inexpensive monitor, one Ethernet card, 1GB of disk space), but put 32MB of RAM and a 66MHz 486 in one and 16MB of RAM and a 60MHz Pentium in the other. You know that when you add RAM to a file server, its performance improves. In fact, a 486 with 32MB of RAM will usually give you better server performance than a Pentium with 16MB of RAM. And it costs less.

Just when the competition thought it was safe to go back to business as usual.
Visit us at PC Expo booth 3470 June 28-30 and find out why the business of network printing will never be the same.
QMS
New network printers. New technology.

FACE OFF RAM IS THE BEST INVESTMENT YOU CAN MAKE

16MB of RAM: ZD Labs' Netbench, a file server benchmark, demonstrates just how much performance you stand to gain by doubling your server's RAM from 16MB to 32MB.



16MB of RAM," page 208). So save your money: Unless you're planning on having 250 users on a single file server, you don't need a Pentium. Database servers are another matter entirely. I'll cover them in a future column.

• Take a fast bus. Repeat after me: ISA bad. S-l-o-w. The server you buy should have an EISA bus. Micro Channel? You're joking, right? Sure, it's fast. Sure, it supports Plug and Play (while NetWare doesn't). But you'll find a much wider selection of cards for EISA (which also supports ISA, by the way, if you really need it), and a much wider array of system vendors building servers around EISA. With its 33-megabyte-per-second (MBps) burst mode, EISA is definitely fast enough to handle Ethernet or Token Ring traffic, Fast SCSI disks, and just about anything else you can plug in to it today.

Tomorrow, however, is a different matter altogether. If your future network plans include FDDI or 100-megabit-per-second (Mbps) Ethernet or 155MBps Asynchronous Transfer Mode, you might want to look into one of the new 132MBps buses: either PCI or VL-bus. The jury is still out on which one is better (for today's Ethernet speeds, EISA beats them both). But our tests have shown that both PCI and VL-bus have similar performance and behavior characteristics.

• Dial for disk drives. You want Fast SCSI-2 drives with low seek and access times. At 2GB and an access time under 13ms, the Seagate Barracuda III is a good example. Do you want to plug it in to a caching SCSI controller, such as those made by DPT? There's a lot of controversy over whether a hardware cache makes a difference. Personally, I've seen no performance difference on our small network, but I'm willing to be convinced.

• Save yourself in the NIC of time. All NICs are not created equal: Some are more expensive than others. Choose a card that supports full-duplex Ethernet, which uses all four wires in your 10Base-T lines to pass data from hub to server and from server to hub simultaneously. You'll need a switching hub that supports it, too, such as those from Kalpana. For this, I recommend Compaq's NetFlex—it's around $400, but its bus mastering takes a big load off your CPU. When I'm feeling stingy, I like the 3Com EtherLink III 3C579: It's fast, not horribly expensive (less than $300), and easy to install.

So much for the hardware. Next month: The secrets of buying NetWare for your new server. JOHN MONTGOMERY

PC Contact GOPHER IT

HGopher 2.3

You're on the Internet, but FTP is just too confusing. Sure, there are a million versions of Gopher floating around, but this one's special. First and foremost, it's multithreaded: You can run up to three searches at once. You'll also enjoy the interface, which supports right-mouse button menus and clever bookmarks so that you can return to your favorite places easily. Download GOPHER.ZIP from PC Contact's data library 3 (Utilities/Misc.) or see page 228 to order a disk from Public Brand Software.

NET TIPS

WINDOWS FOR WORKGROUPS

Problem: *The Windows for Workgroups installation removes NetBIOS from your SYSTEM.INI, making applications such as Lotus Notes nonfunctional.*

Solution: Add it back in. Edit SYSTEM.INI with any text editor, and go to the [Network] section. Add the line Exclude=0 anywhere in this section. This line tells Windows for Workgroups not to use Novell's NetBIOS. Now go to the [386Enh] section, and add the line V86ModelLANAs=0. This line tells Windows for Workgroups that NetBIOS will use logical network number 0 for its real mode communication. Now, make sure that NETBIOS.EXE gets loaded in your AUTOEXEC.BAT (after your NET START command) and you're finished.

BEN WEISS
NEWTON, MASSACHUSETTS

Problem: *Your Windows for Workgroups client always gets bogged down whenever anyone uses it as a server.*

Solution: Give client operation more CPU time. Open the Control Panel, and double-click on the Network icon. Adjust the slider control in the Network Settings dialog box so that nearly 100 percent of the system's processing time is given to foreground activity.

DAN DOHAN
SAN JOSE, CALIFORNIA

NETWARE 3.1*x*

Problem: *You upgraded to NetWare 3.12 from NetWare 3.11, and you can no longer communicate with your fax server or other network hardware.*

Solution: Chances are you don't have the 802.3 frame type loaded on your network card. NetWare 3.12 stopped using 802.3 as the default frame type, opting instead

EXPLORE the INTERNET!

FREE

DELPHI is the only major online service to offer you full access to the Internet. And now you can explore this incredible resource with no risk. You get 5 hours of evening/weekend access to try it out for free!

Use DELPHI's Internet mail gateway to exchange messages with over 20 million people at universities, companies, and other online services such as CompuServe and MCI Mail. Download programs and files using **FTP** or connect in real-time to other networks using **Telnet.** You can also meet people on the Internet. **Internet Relay Chat** lets you "talk" with people all over the world and **Usenet News** is the world's largest bulletin board with over 4500 topics!

To help you find the information you want, you'll have access to powerful search utilities such as "Gopher," "Hytelnet" and "WAIS." If you aren't familiar with these terms, don't worry; DELPHI has hundreds of expert online assistants and a large collection of help files, books, programs, and other resources to help get you started.

Over 600 local access numbers are available across the country. Explore DELPHI and the Internet today. You'll be amazed by what you discover.

FIVE HOUR FREE TRIAL!

Dial By Modem 1-800-365-4636, Press return until you get a prompt
At Username, enter JOINDELPHI. At Password, Enter PCC47

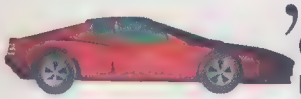
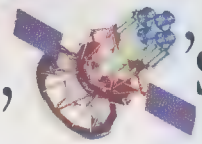
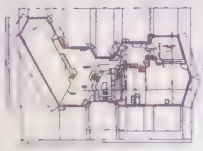
Offer applies for new members only. A valid credit card is required for immediate access
Other restrictions apply Complete details are provided during the toll-free registration.

Attention Current Internet Users: See what DELPHI can offer you! Stock quotes, Grolier's Encyclopedia, newswires, and hundreds of other services are just a few keystrokes away. Telnet to delphi.com and enter the username and password above for a free trial.

Circle 239 on reader service card.

DELPHI
INTERNET

Questions? Call 1-800-695-4005.
Send e-mail to INFO@delphi.com

Yes, you can do Windows™ and walls and doors and floors, ceilings, whole 's,  's, trains, boats, 's, chains, 's, diamond rings, 's and things,  's, power plants, topo maps,  's, helicopters, roads and bridges, circuit boards, 's power lines, 's, airports, furniture, digital terrain models, 's, skateboards, the , 's, chemical plants, 's, golf courses, anything you can think of ... even the kitchen

MicroStation. CAD software for Windows and Windows NT

Open yourself to a world of design possibilities with MicroStation CAD software. From 2D drafting to advanced 3D surface modeling, MicroStation Version 5 is the ultimate design tool for the Windows environment. And the most complete, with photorealistic rendering and animation. All in one package!

Join the many designers who have made the move to the CAD tool for the '90s.

Call 800-345-4856 for a free demo disk and brochure on MicroStation.

MicroStation
CAD *for the* '90s

INTERGRAPH

MicroStation is a registered trademark of Intergraph Corporation. MicroStation is a registered trademark of Bentley Systems, Inc. Intergraph affiliate. Other brands and product names are trademarks of their respective owners. © 1993 Intergraph Corporation. Huntsville, AL 35894-1000. DDAD148A0

Circle 127 on reader service card.

for 802.2. To load the right frame type, go to the system console and type LOAD *driver* FRAME=ETHERNET_802.3 where *driver* is the name of the driver for your server's network interface card. After you answer some questions (yes, you do want to add another frame type to a previously loaded board), type BIND IPX TO *driver* so that NetWare's IPX protocol will run with 802.3. That should take care of your compatibility problems.

JANE IRELAND
PEORIA, ILLINOIS

Problem: *You're installing Windows on a NetWare client and it freezes when you run Windows Setup.*

Solution: NetWare's broadcast messages cause the client to interrupt the installation and wait for you to press Ctrl-Enter. The solution is to run NetWare's CASTOFF command before you run Setup.

S.G. HUBERT
LAHAINA, HAWAII

Problem: *You would like to make the CD-ROM drive on your NetWare server available to DOS and Windows clients.*

Solution: If you have NetWare 3.11, you'll need a third-party utility. However, NetWare 3.12 users are in luck. First load the NetWare-supplied driver for your hard disk controller. Next, load the Advanced SCSI Programming Interface (ASPI) driver that your hard disk controller requires. It probably has a name such as CPQASPI.DSK or ASPICD.DSK. Now just type LOAD CDROM.NLM. You should see a list of the CD-ROM drives on your system. To make the CD appear as a DOS client volume, go to the server prompt and type CD MOUNT *N* (where *N* is the drive number for the CD). DOS and Windows clients should now see the CD as another network disk drive.

BEN LOEB
CAMBRIDGE, MASSACHUSETTS

HOT TIP NEW NETWARE CLIENT

Problem: You've just upgraded your NetWare clients to Novell's latest VLM driver software and your drive mappings don't work.

Solution: The Virtual Loadable Module (VLM) drivers require a change to each client's LASTDRIVE statement in CONFIG.SYS. Edit CONFIG.SYS with your favorite text editor and change the LASTDRIVE line so that it reads: LASTDRIVE=Z. If this line isn't already there, then add it. Your clients should no longer have problems with drive mappings.

—JANE IRELAND
PEORIA, ILLINOIS

PRINT SERVERS

Ethernet ▪ Token Ring ▪ Arcnet
Pocket size ▪ HP plug-in cards
Netware ▪ TCP/IP

We've packed each model with features, performance, and value. You can't get a better print server for the price.

- Connects your printer directly to your Novell Netware and TCP/IP networks
- Microserv models plug directly into parallel port on any printer
- Lanjet models plug into HP XIO and MIO option slots
- Up to 100,00 characters per second on parallel port
- Serial port can be input to printer or output from network at up to 115.2K baud
- Prints status and configuration at the push of a switch
- Comes with a one-year warranty and unlimited technical support, made in USA

NETWARE FEATURES

- Supports 8 queues on up to 8 file servers
- Automatically locates queues on file servers
- Can notify user of job completion and printer errors
- Supports encrypted passwords
- Shows status via Netware's PSC and PCONSOLE
- Installation program simplifies setup
- Auto detects and uses 802.3 and Ethernet II
- Auto detects and reattaches to new file servers
- Simultaneous queue server and PSERVER

yes
It runs with NetWare

TCP/IP FEATURES

- Finds IP address from BOOTP, RARP, or memory
- Supports LPR, RSh, Rexec, and standard TCP/IP connections to any TCP/IP host
- Configure using Telnet, TFTP, or the serial port
- Supports secure hosts with list of allowable IP addresses and subnet masks
- Notifies user of job completion via SMTP mail
- Notifies supervisor of paper out, off-line, and jobs printed by sending SYSLOG entries
- Shows estimated job completion time and throughput via LPQ command
- Customized banners in PCL or Postscript
- User-defined strings before and after job
- Flash EPROM for easy upgrade to new versions
- Can convert UNIX ascii files to print directly to postscript and non-postscript printers

CALL NOW FOR FREE CATALOG

- Print servers
- Data switches
- Keyboard monitor products

Make the Rose Connection

ROSE ELECTRONICS

10850 Wilcrest Drive ▪ Houston, Texas 77099 ▪ Phone (713) 933-7673 ▪ Fax (713) 933-0044 800-333-9343

Circle 169 on reader service card.

VISIO AND VISUAL BASIC DO THE TEXAS TWO-STEP

A Lean, Mean Business Card Machine

Dear Vince and Woody: I just read your column on vampires and the Rocky Horror Picture Show. Cool. It's really neat that you guys write for people on the cutting edge, instead of those old mainframe fuzzheads who are still locked in a sequential world. Hey, my dad keeps talking about a national speed limit on the Information Superhighway. Uncle Al thinks an Environment Division is part of a COBOL program. Gag me with a RAMDAC.

Oh. Ixnay on the TV jokes, OK? Some adult is going to catch on and get you guys in hot water. If Aunt Tipper yanked *PC Computing*'s PG-13 rating, I'd have to sneak my favorite computer mag in with the *National Geographics*. Bummer.
Sincerely, Chelsea

Back to Business Last month in this column we drove a stake into the heart of Shapeware's Visio 2.0 and identified the components of its business card "shape." If you missed that issue, not to worry: This month's installment just uses the names we found as though they were documented somewhere other than in last month's column—which they aren't.

Finding those components is the hard part. Once you have that information, constructing the business card engine is so simple it's embarrassing. All you have to do is choose the pieces and hook them together with a few lines of Visual Basic glue.

Programmers have been talking about reusable code for decades; it's something of a Hacker's Holy Grail, an underpinning of the object-oriented milieu. Watch closely as we tie together Visual Basic and Visio. Strictly speaking, we aren't reusing code. But in a very important sense, we are reusing. . . things. Globs. Pieces. Objects, for lack of a better term. This is the future of Windows programming: little bits of custom glue—BASIC programs comprehensible to mere mortals—that tie together well-designed, malleable, reusable chunks of Windows applications.

So much for philosophy. Let's get our hands dirty. Crank up Visio 2.0, choosing the Forms template. Click on the business card stencil, the one at the bottom right. Drag it over to the new Visio document.

If you have a logo you'd like to put on your business cards, click on File, then Import, and bring it in. Resize and move the logo to the card, wherever you like best. Once you have a single business card set up the way you want it, click on Edit, then Select All. Hold down the Ctrl key and drag with the mouse to create the second business card. Then hold down the Ctrl key again and drag to create the third. Repeat this procedure until you have all the business cards you want, positioned correctly on the page. Click on File, then Save, and give your business card document a name.

Now get Visual Basic 3.0 going. We need to create a form that will hold the Visio business card information. Double-click on the capital *A* icon to set up each of three labels (Company Name, Employee, and Address). Double-click on the *AB*-in-a-box icon to put each of three text boxes on the form. Make sure that the second and third text boxes have the MultiLine property enabled (select the box, hit F4, and change the MultiLine property to True).

Next, double-click on the oval icon and put a push button on the form. Type Get Business Card or some such. Then double-click on the oval icon again and put a second push button on the form; call this one Update Business Card.

Double-click on the Get Business Card button and type in the program shown in "Visual Basic's All Business," below. It retrieves the current settings on the first business card. The program takes all of about 10 lines—well, 11. You also have to create the function in "L2C$()," page 216. When you've finished the retrieval side, double-click on the Update Business Card button and type in the second program in "Beneath the Button," page 216. It loops through all the business cards, setting the blocks on the cards to

HOW TO DO IT VISUAL BASIC'S ALL **BUSINESS**

Here's the code for your Get Business Card button in Visual Basic.

```
Sub Command1_Click ()
Dim MyVisio As Object
Dim BusCard As Object
Set MyVisio = GetObject(, "visio.application")
Set BusCard = MyVisio.ActivePage.shapes
If BusCard.Count > 0 Then
Text1.Text = L2C$(BusCard(1).shapes(3).Text)
Text2.Text = L2C$(BusCard(1).shapes(4).Text)
Text3.Text = L2C$(BusCard(1).shapes(5).Text)
End If
End Sub
```

The GetObject command in the fourth line, above, hitches this program up to Visio. Then BusCard gets attached to the "shapes" on the current page. BusCard.Count returns the number of shapes. The text within the business card—for reasons known only to Shapeware—comes back in shapes(3), shapes(4), and shapes(5). To learn more about the function we've created, see "L2C$()," page 216.

$599

AVEC Colour
Avec Colour 2400

RELISYS
Relisys RELI 2412DPI

$1399

- **2400 dpi Resolution**
- **600 x 300 True Hardware Resolution**
- **Includes OmniScan**

Relisys includes OmniScan Software Edition from Caere: Award-winning software that lets you recognize text (OCR), edit color images, and send and receive faxes directly from your computer. It's and integrated solution that includes Caere's best-selling products: OmniPage Direct, Image Assistant, and FaxMaster.

- **2400 dpi Resolution**
- **1200 x 300 True Hardware Resolution**
- **Single Pass**
- **Includes Transparency Adapter**
- **Includes Photoshop Full Version**

The world's leading photo design and production tool.

Now you can have all the features without the high cost.

Before now, buying a quality scanner meant spending a fortune. Relisys' new Cold Scan Technology changes everything. Finally, a family of **full-featured scanners** at prices you can afford!

Dust-Free, Cold Scan Technology. Ordinary hot-lamp scanners rely on a fan to circulate cool air - and dust - throughout the scanning process. But new cold scan technology allows Relisys to fully encapsulate the process. So you get unprecedented, dust-free accuracy.

Longer lamp life. 35,000 hour lamp life versus approximately 2000 hours for hot florescent bulbs.

Exceptional Value. What's more, our new technology is not only superior to the competition's – **It's more affordable!**

Dealer Contact:
Micro Central
55 Reid Street
South River, NJ 08882 **1.800.836.4276**

Consumer Contact:
Egghead **1.800.Egg.Head**

Computers 800
Incorporating ComputerLand 800 **1.800.321.1234**

Comp U.S.A. **1.800.Comp.USA**

Photoshop™ is a trademark of Adobe Systems, Inc. Caere®, OmniPage®, OmniScan®, OmniPage Direct, Image Assistant, and FaxMaster are trademarks of Caere Corporation.

Circle 144 on reader service card.

HOW TO DO IT BENEATH THE BUTTON

Here's the program that lurks beneath the Update Business Card button. Double-click on the Update Business Card button and type:

```
Sub Command2_Click ()
Dim OhVisio As Object
Dim BusCard As Object
Set OhVisio = GetObject(, "visio.application")
Set BusCard = OhVisio.ActivePage.shapes
For i = 1 To BusCard.Count
BusCard(i).shapes(3).Text = Text1.Text
BusCard(i).shapes(4).Text = Text2.Text
BusCard(i).shapes(5).Text = Text3.Text
Next i
End Sub
```

Note: Any extra picture creates an OhVisio.ActivePage.shapes entry that you have to skip in the For loop. So if you've included a logo, change the For i = line to For i = 1 To BusCard.Count Step 2.

the values that have been typed in to the Visual Basic form. This program, too, weighs in at just 11 lines, once you figure out how to do it. Amazing.

Save your Visual Basic program so it doesn't get clobbered if Windows suddenly decides to fly south. Make sure Visio is running with your business card document open, then try running Visual Basic by clicking on the right-wedgie button. See how you can pick up the current value of each of the three blocks in the first business card? And see how you can change the value of the three blocks in all of the business cards, with just one click? Magic.

Making Magic Here's the cool part: You can make this Visual Basic program part of Visio itself! Save and close down Visio. Then from inside Visual Basic, click on File, then Make EXE File, and give your program a name like WIZBIZ.EXE. Shut down Visual Basic and flip over to File Manager. Move the WIZBIZ.EXE file into the Visio subdirectory called \ADD-ONS.

Now start Visio again. Bring up your business card document—it's probably first on the list of files on the File menu. Select Window, Run Add-on, double-click on WIZBIZ.EXE, and wham! Your Visual Basic program, now integrated into Visio, is poised and ready to do your bidding.

This is the way to do a macro language. Why spend hundreds of organism-years inventing a stunted, incompatible, proprietary kludge of a language and shoehorn it into an application? (Yes, we mean VBA.) Shapeware did it right, except for the lousy documentation and the lack of hooks into the menus, shortcut keys, toolbox icons, and a few other things. Little ol' Visio has a macro language that's several orders of magnitude more powerful than monster VBA/EXCEL: It's called Visual Basic.

WOODY LEONHARD & VINCENT CHEN

Start the music and dance your own number with WOODY 72241,2125 and VINCE 72241,2221 on PC Contact.

PATCH L2C$()

To get the Get Business Card macro to work, we had to create a little kludge called L2C$() to stick extra Chr$(13)s in the text wherever there's a Chr$(10). In the window where you're typing the Get Business Card macro program, click on the Object: list, and pick (general). When the Proc: list shows (declarations), type in this little program:

```
Function L2C$ (ByVal
Instring$)
For i = 1 To Len(Instring$)
If Mid$(Instring$, i, 1) =
Chr$(10) Then a$ = a$ +
Chr$(13)
a$ = a$ + Mid$(Instring$, i, 1)
Next i
L2C$ = a$
End Function
```

TOOL TIPS

WINDOWS DEBUGGING

Problem: *You want a clever way to see what your program is doing as you run it in debug mode.*

Solution: As you debug Windows applications written using Microsoft's Windows SDK, don't forget about Windows' little-known OutputDebugString function. It displays a text string on the debugging terminal. The statement

```
OutputDebugString ("Init
complete; calling
ShowWindow\n");
```

outputs the string enclosed in quotation marks to the debug terminal. Used in this manner, OutputDebugString constitutes a simple debugging facility similar to the PRINT statement in BASIC and the printf function in C. By placing calls to OutputDebugString in strategic locations throughout your program, you can see what branches the program is taking and what messages it is processing.

If you need to include numeric information in the output from OutputDebugString, use Windows' wsprintf function to format text strings prior to displaying them. It works like C's sprintf function but doesn't increase your code size. The statements

```
wsprintf (szBuffer, "The window
handle is %u\n", hwnd);
OutputDebugString (szBuffer);
```

convert the window handle stored in hwnd to ASCII form and output the resulting string.

JEFF PROSISE
CONTRIBUTING EDITOR

DOS PRINTING

Problem: *You need a routine to check on a printer's status.*

Solution: An easy way to make sure the printer is ready is to invoke the BIOS's interrupt 17h, function 02h: Get Printer Status service. Function 02h returns an 8-bit value in ah that reflects the status of the printer. On most systems, ah returns with bit 3

WONK

SideBar™ Wonks Your Windows to Perfection

SideBar eliminates the last bit of DOS clunkiness from MS Windows.

Object-oriented interface makes it easier to manage files, disk drives and printers.

Simply drag and drop files to copy, move or print them.

Now opening, copying, moving, deleting, renaming and printing are intuitive.

Speed up the way you work by customizing SideBar to conserve desktop space.

Sometimes prefer to key-in DOS commands? The command line's always there.

SideBar is the efficient desktop for Windows—a small, fast shell that automatically creates objects that make it simpler to manage applications, documents, folders, drives, TSRs, printers, etc. All you need to do is point and click.

SideBar simply makes Windows more 'windows-like.' And that makes your work go quicker and easier. It's an idea incorporated in Microsoft Office, but we've taken it to its obvious conclusion.

SideBar makes MS Windows a better place to work.

Quarterdeck

Quarterdeck Office Systems, 150 Pico Boulevard, Santa Monica, CA 90405 (310) 392-9851 Fax (310) 314-4219
Quarterdeck International Ltd., B.I.M. House, Crofton Terrace, Dun Laoghaire Co. Dublin, Ireland Tel.(353) (1) 284-1444 Fax: (353) (1) 284-4380

©1993 Quarterdeck Office Systems. Trademarks are property of their respective owners.

Circle 187 on reader service card.

Help TOOLKIT TIPS: Convert Binary Numbers to ASCII in Assembly Language

set if the printer is not turned on, if the printer is turned on but is currently offline, or if there is no printer attached to the specified parallel port. In assembly language, the following code checks the printer attached to parallel port LPT1 and branches to an error handler if the printer is not ready:

```
mov ah,02h
mov dx,00h
int 17h
test ah,08h
jnz error
```

The value in dx specifies the printer port: 00h for LPT1, 01h for LPT2, and 02h for LPT3. A well-written routine should also branch to an error handler if bit 5 is set. Bit 5, if set, indicates that the printer is out of paper. If bits 3 and 5 are clear, it's safe to go. A modified version of the above routine that checks bits 3 and 5 looks like this:

```
mov ah,02h
mov dx,00h
int 17h
test ah,28h
jnz error
```

Do not wait for a zero return in ah, or your program could get stuck in an infinite loop. Bit 7 will be set when the printer is ready to accept characters.

JEFF PROSISE
CONTRIBUTING EDITOR

DOS ASSEMBLER

Problem: *In assembly language, printing numbers is no trivial matter.*

Solution: In high-level languages such as BASIC and C, it is easy to display numbers onscreen. To display a 1024 in BASIC, you'd simply type PRINT 1024. In C, the command is printf ("%d", 1024).

In assembly language, the programmer must perform the binary-to-ASCII conversion, because there are no built-in functions to do it automatically. Here is a simple and efficient routine for displaying numbers as large as 65,535 (the largest number that

HOT TIP — WINDOWS GRAPHICS

Problem: You need a program that lets you write outside of your window's client area.

Solution: It's not a great idea to write to areas outside your windows, but if you're writing a screen saver, for example, you may need to. BeginPaint and GetWindowDC() won't do—you need CreateDC(). Here's how to use it in C:

```
hdc = CreateDC
("DISPLAY", NULL,
NULL, NULL);
```

And if you need to retrieve a device context for the entire screen, call GetDC with a NULL parameter—it's undocumented, but it works.

—MARY PARKER
CHARLEMONT, MASSACHUSETTS

Where do you keep a 400 lb. gorilla?

In a shoebox, of course.

Here's a quick and easy way to organize and find your files. Including clip art, graphics, images, video, audio, and more. KODAK SHOEBOX Photo CD Image Manager Software lets you create your own simple or sophisticated search criteria. And find almost anything faster. Even a 400 lb. gorilla. You'll work smarter, too. You can share files within a work group. And export images to your favorite applications. So if you need to find things fast, don't let it rattle your cage. Get KODAK SHOEBOX Software. Call 1-800-CD KODAK to order for the special price of $124.99, or for the name of a dealer in your area.

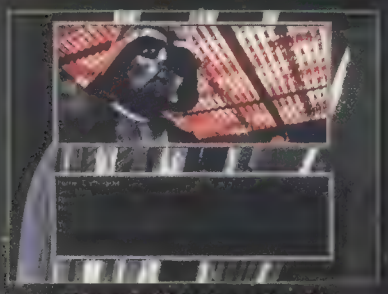
Photo CD

[illegible] Kodak Shoebox and the Photo CD symbol are trademarks. The Photo CD symbol is for use by Kodak and its licensees only, and may not be reproduced without written permission from Kodak.

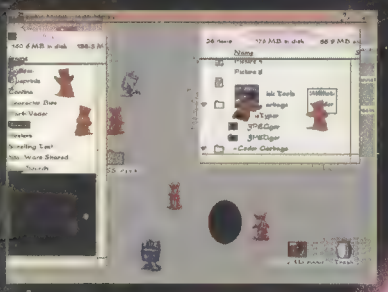
Circle 176 on reader service card.

THE STAR WARS YOU'VE NEVER SEEN... COMING TO A COMPUTER SCREEN NEAR YOU THIS SUMMER.

See the Cantina, space battles, hyperspace and more.



Enjoy an insider's view - character biographies, blueprints, the complete script.



Stand alone product compatible with Intermission™ and After Dark.

-BONUS-
A SPECIAL MESSAGE FROM GEORGE LUCAS ABOUT THE NEXT STAR WARS TRILOGY

Behind every great film is a screen saver. Star Wars Screen Entertainment brings your monitor screen savers and more... the concepts, original art, animation, sounds, even a special message from George Lucas. Now Star Wars is on your computer — Screen Entertainment has arrived.

STAR WARS
SCREEN ENTERTAINMENT

For Windows and Macintosh • At your favorite software retailer or call 1-800-STARWARS
Circle 141 on reader service card.

LUCAS Arts

can be represented with a 16-bit value) on the screen:

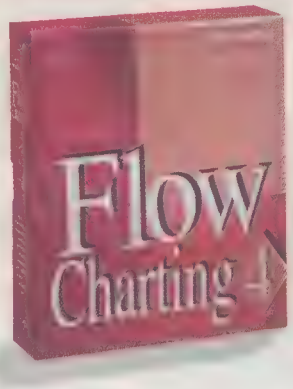
```
mov bx,10
xor cx,cx
label1: inc cx
xor dx,dx
div bx
push dx
or ax,ax
jnz label1
label2: pop dx
add dl,30h
mov ah,2
int 21h
loop label2
```

On entry to this routine, ax holds the integer value to be printed. After the conversion is performed and the ASCII characters constituting the number are placed on the stack, DOS function 02h is used to output each character to the standard output device (by default, the screen) as it's popped off the stack. If you encapsulate this routine into a procedure named printnum, you can print the number 1024 with the following instructions:

```
mov ax,1024
call printnum
```

That's almost as easy as having a high-level language to do your bidding.

JEFF PROSISE
CONTRIBUTING EDITOR

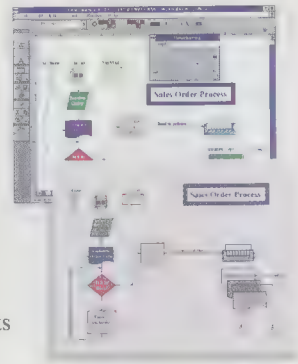


Flowcharts Any Way You Want!

Introducing Flow Charting™ 4 for Windows!

We've re-worked the basics to make flowcharting easier and more flexible than ever. We call it *sensible* technology. The end result is a flowcharting program that is incredibly powerful, yet remarkably quick to learn and use. And it's packed with everything flowcharters want. Here's a sampling:

- SensibleLines™ are totally editable. You've never experienced anything like it. Experiment with the look of your charts!
- Get your point across thanks to distortion-free shape sizing with SensibleShapes™.
- SensibleText™— Word processing masterfully designed for flowcharts — it works the way you expect!
- Job-specific shape templates let you create the perfect chart for the task at hand.
- Snapshot™ your preferences. Your charts look great every time.



And Flow Charting 4 is backed with a 90-day no-risk guarantee. Our legendary post-buy support includes free unlimited technical support, free subscription to The Flow Charter™ and access to valuable flowcharting resources.

For flowcharts *exactly* the way you want, you need Flow Charting 4 for Windows! See your local dealer today, or for a free interactive demo, call now:

(800) 283-4080 ext. 877
International: (408) 980-7301

PATTON&PATTON
Excellence in charting the flow of ideas!

Patton & Patton Software Corporation 485 Cochrane Circle, Morgan Hill, CA 95037

Circle 224 on reader service card.

WINDOWS CONFIGURATION

Problem: *You want to be able to store all the configuration information for your application in an unobtrusive yet easily accessible location.*

Solution: Here's a simple solution: Rather than store a private INI file in the Windows directory, store it in the directory in which your program resides. The name and location of a program's executable file are easily obtained with Windows' GetModuleFileName function. Once you have in hand a string specifying the executable file, simply replacing the EXE extension at the end of the string with the letters INI creates a specification for an INI file in the program's own directory. It's not at all complicated. In fact, it can be accomplished with three lines of code:

```
i = GetModuleFileName
  (hInstance, szIniFile, sizeof
  (szIniFile));
while (szIniFile[i—] != 0x2E);
    lstrcpy (&szIniFile[i+2], "INI");
```

The first line copies the executable filename to the buffer szIniFile. The second scans backward from the end of the string to locate the period preceding the filename extension, and the third replaces the existing extension with INI. Pass the resulting string as the fourth parameter to the WritePrivateProfileString function and your INI file will be created in your directory rather than the Windows directory.

JEFF PROSISE
CONTRIBUTING EDITOR

POWERLOOK

It Beats Other Flatbed Scanners. Like A Drum.

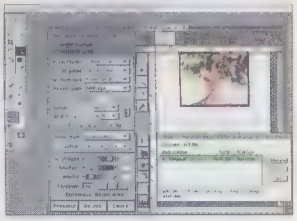
To get a true picture of the most remarkable breakthrough in what color flatbed scanners can do, take a PowerLook.

The PowerLook from UMAX® delivers true 3.0 Dynamic Range, in one-pass, with resolution so sharp, you'd swear it was a drum scanner. But unlike a drum scanner, this 1200 x 1200 dpi* flatbed costs less than $3,500.

PowerLook is teamed with MagicScan™– the ultimate intuitive user interface. Its advanced features like batch-scanning, descreening and auto-exposure are designed to save you time. You also get a whole complement of image and production tools, including color balancing, negative-to-positive image inversion, auto-scaling and much, much more that gives you "The Magic of Color" in every image.

PowerLook is virtually maintenance-free given its unique modular design that separates optical, electrical and transmission subsystems. And by utilizing a cold cathode lamp and sealing the optics, the PowerLook is completely particle-free as well.

PowerLook's breakthrough technology separates the analog and digital signals, dramatically reducing noise levels, giving you sharper, cleaner and higher quality color images at speeds so fast you'll take a second look.



MagicScan offers Auto-Adjustments and Previews that optimize user control and productivity.

Built-in SCSI II interface and TWAIN compliance means the PowerLook can be used in just about any environment. And, with 30-bit color, you have the freedom to manipulate images exactly the way you want them to look.

To give you even more control of your images, the PowerLook includes today's leading image editing and color separation software and a Transparency Adapter for any type of pre-press application. You know, the ones you currently "farm-out" to the service bureau.

So if you'd like to get your hands on the flatbed scanner that beats other flatbeds cold, beat a path to the phone and call us at: **1-800-562-0311**

UMAX®
The Magic of Color™

Circle 257 on reader service card.

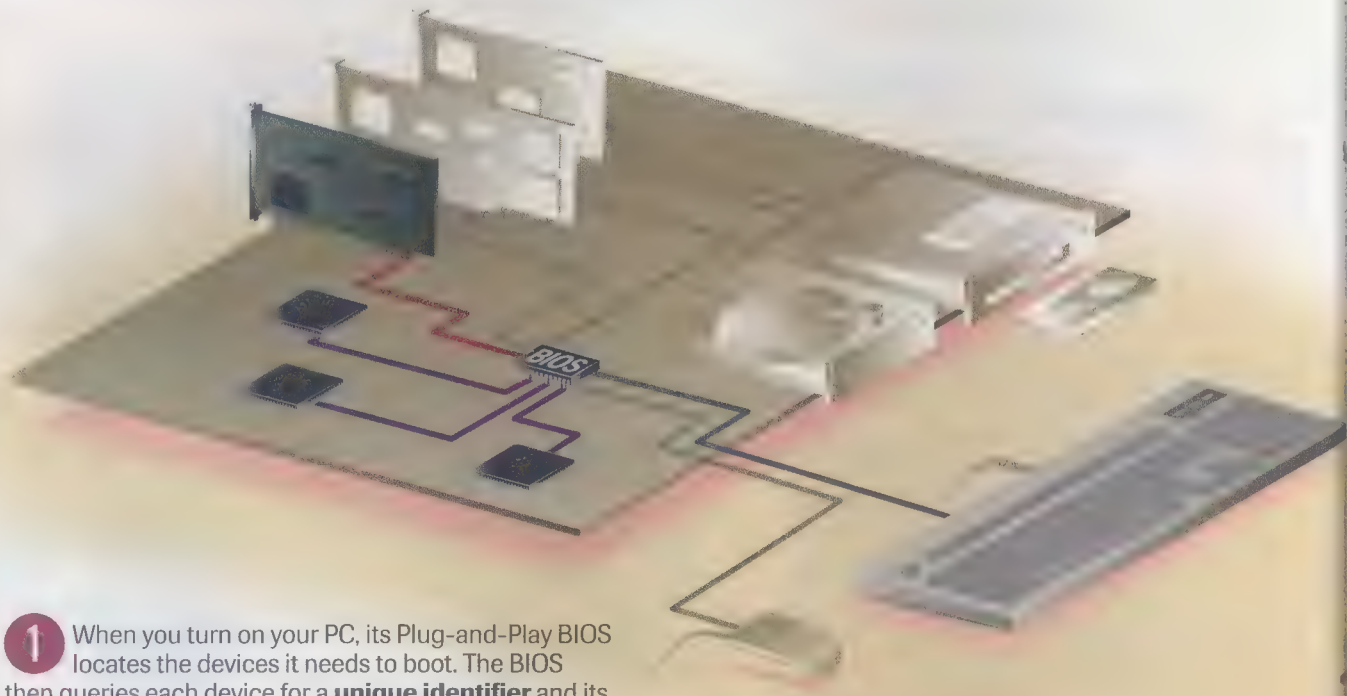
* 2400 x 2400 dpi can be achieved through interpolation with UltraView™ ©1994 UMAX Technologies, Inc. 3353 Gateway Blvd., Fremont, CA 94538. 510-651-8883 • Fax 510-651-8834 • Toll Free 1-800-562-0311 UMAX is a registered trademark of UMAX Data Systems, Inc. "The Magic of Color," PowerLook, MagicScan and UltraView are trademarks of UMAX Technologies, Inc. Other company names and product names are trademarks of their respective companies.

How It Works

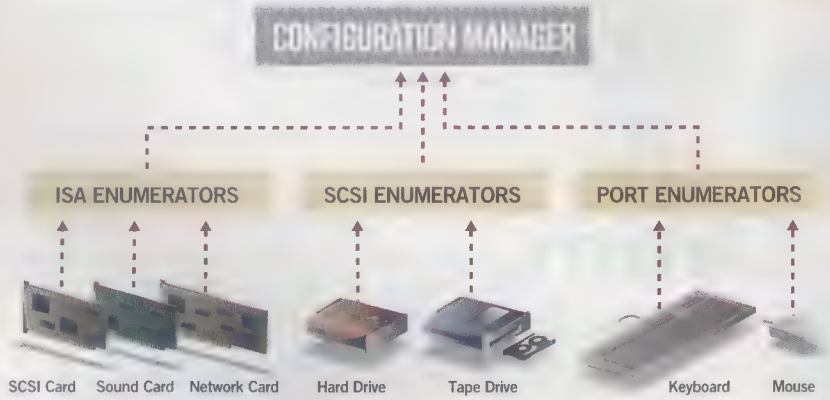
BY RON WHITE
ILLUSTRATED BY
TIMOTHY EDWARD DOWNS

Plug and Play

Think of it as digital aspirin. The new Plug-and-Play standard lets you add peripherals to your system without worrying about jumpers, dip switches, or any other hardware arcana. Plug and Play configures your PC for you—so you can get work done, instead of working on your computer.



1 When you turn on your PC, its Plug-and-Play BIOS locates the devices it needs to boot. The BIOS then queries each device for a **unique identifier** and its **system resource** requirements. Next the BIOS resolves any resource conflicts among these devices. Devices not required to boot the PC are not yet activated.



2 When the operating system loads, the **configuration manager** asks the **bus enumerators** to identify all the devices they're responsible for and the system resources that those devices require. The enumerators get the information directly from the devices or, if a device is not a Plug-and-Play component, the information comes from a central database that you create manually in advance. The configuration manager stores the information from the bus enumerators in the **hardware tree.**

Neither Rain, nor Sleet, nor IRQ Conflict Shall Keep Your System Down

3 The configuration manager loads a driver for each of the devices in the hardware tree but instructs the devices to await the assignment of specific resources. Then, using the information in the hardware tree, the **resource arbitrator** devises a plan for assigning resources. It starts with the least flexible device and ends with the device that is most flexible in the resources it can use.

4 Finally, the configuration manager tells the enumerators what resources it allocated to their devices. The enumerators tell their devices what resources they can use by writing that information to the devices' memory registers, and startup is complete. As you work, the BIOS and configuration manager continually watch for new devices.

KEY WORDS

Unique Identifiers: These numbers are burned into Plug-and-Play devices' ROM and act like mailing addresses for configuration information.

System Resources: These include interrupts, I/O ports, and direct memory access addresses. Resource conflicts occur when one device attempts to use the same interrupt or port or direct memory access address that another device is using.

Configuration Manager: The central figure during all phases of operation, it controls and communicates with all the Plug-and-Play processes.

Bus Enumerators: These are special drivers that act as the interface between the operating system and hardware components of the system, such as the ISA bus, the PCMCIA socket and the SCSI bus, which connect several devices. During installation, Windows (or the Plug-and-Play OS) automatically determines how the bus enumerators are configured.

Hardware Tree: Your system needs to keep a record in RAM of the current system configuration. This record is your hardware tree. It is drawn from a central database of configuration information about all devices associated with a particular system, whether they are currently installed or not.

Resource Arbitrator: This utility contains all the information about the workings of a resource, such as its interrupt and direct memory address, and various formulas for mixing and matching resources with different devices.

DESPITE ADVANTAGES, IT MAY NOT BE READY FOR YOU

SCSI: Still Crazy After All These Years

SCSI was originally designed to make life easier—like the Tax Reform Act of 1986. The motivation for both was simple: economics. In theory, by building computer systems and peripherals to meet the SCSI standard, manufacturers could guarantee themselves plug-and-play interoperability. Computer makers would have a wide variety of compatible peripherals, and peripheral makers could sell identical SCSI hardware to PC, Macintosh, DEC, and Mips owners. Right. And to calculate your taxes, you merely have to multiply your income by 28 percent.

A SCSI system can support a large number of peripherals, reducing the impact on your PC in terms of slots and CPU usage. Despite these virtues, however, SCSI is still a maturing standard and, in most cases, represents more potential than productivity.

SCSI differs considerably from other common interface standards, such as IDE or serial ports. In a SCSI system, intelligent peripherals exchange commands and data over a private communications channel: the SCSI bus. Unlike your PC's expansion bus, which is formed by printed circuit traces and fixed card connectors (slots), the SCSI bus is simply an interconnecting cable.

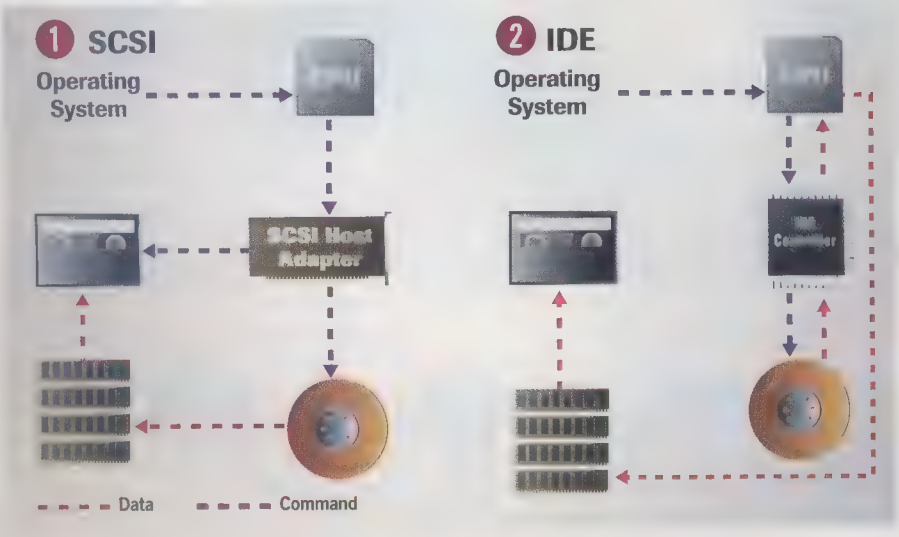
A key element of the standard is that SCSI devices aren't passive. There's no single central intelligence, for example, that manages how the devices interact or decides which device talks and which listens. Instead, SCSI peripherals communicate as peers, sending commands and data in packets addressed to each other.

But adding intelligence to a peripheral makes it more costly to manufacture. SCSI devices typically are priced higher than their dumber counterparts. Balancing this cost, however, is design freedom for the manufacturer. Regardless of its function or how it operates internally, a device that sends and receives SCSI commands can always connect to a SCSI bus.

System Advantages Proponents of SCSI are quick to point out the benefits of the standard. A single SCSI bus can connect up to eight SCSI devices. The SCSI adapter card itself counts as one device, but that still leaves you free to attach two hard drives, a CD-ROM drive, a tape drive, a Bernoulli drive, a magneto-optical drive, and even a

HOW IT WORKS SCSI PLACES A LOWER LOAD ON THE CPU

SCSI Setup: A SCSI host adapter has several advantages over an IDE controller. One of the greatest advantages is that two SCSI peripherals on the same host adapter can talk to each other with very little CPU involvement, freeing the CPU to run your applications.



1. SCSI The operating system sends a command through the CPU to the SCSI host adapter. (In our example, that command says to transfer a block of data from the hard disk to the tape drive.) The host adapter pulls the data off the disk, stores it in the system's RAM, and signals the tape drive to dump it onto the tape. The CPU is minimally involved.

2. IDE The CPU must negotiate between the tape drive (connected on a floppy cable) and the disk drive (through the IDE controller) at every step—sending commands and transferring data. Many steps are repeated.

DEPEND ON LONG-LASTING DURACELL RECHARGEABLE BATTERIES

COMPAQ DOES

Duracell Rechargeable batteries.
The power behind the Compaq Contura Aero portable computer.
40% more worktime.* Available at retail stores.
Now you have a rechargeable battery choice.

DURACELL
RECHARGEABLE BATTERY

Circle 153 on reader service card.

*Compared to regular nickel cadmium rechargeable batteries. Compaq and Contura Aero are registered trademarks of Compaq Computer Corporation.

WORKAROUNDS PERFORMANCE: **SCSI VS. IDE**

PCbench: We tested virtually the same disk drive with various SCSI and IDE controllers to see which was faster. The answer: It depends. Under DOS, the Compaq Deskpro's embedded IDE controller was fastest.

full-page scanner. SCSI supports all of these peripherals with a single slot in your PC.

The IDE standard is popular, practical, and great for PC systems. But IDE's current DOS interface requirements limit the size of drives to a maximum of 528MB. SCSI adapter cards, however, access drives as large as 8GB under DOS (and larger under many other operating systems). In applications that require enormous amounts of disk space—a central network server, for example—SCSI's the obvious choice.

SCSI is also the data-transfer–rate champ. Theoretically, the upper limit on an IDE data transfer is about 4 megabytes per second (MBps). On average, your PC delivers about half that. The basic SCSI bus, on the other hand, boasts a data-transfer rate of 5 MBps. A recent enhancement to the SCSI standard, called Fast SCSI, bumps that rate up to 10 MBps. Another variation, called Wide SCSI, increases the width of the SCSI bus from 8 bits to 16 bits and provides an extension to 32 bits. A Fast and Wide SCSI bus could reach transfer speeds of 40 MBps, in theory.

Recent modifications to the IDE standard will allow it to match SCSI's drive size, increase the number of drives it supports from two to four, and approximate the speed of Fast SCSI at 11 MBps. But SCSI still offers a major advantage: Because it's a self-contained bus, SCSI improves your PC's performance. Given the proper set of commands, two SCSI peripherals can exchange data directly with each other. Once the exchange begins, the host adapter card and your CPU are no longer required to participate. A SCSI hard drive, for example, could send data to a tape drive on the SCSI bus with minimal demands on your PC's CPU.

Finally, the SCSI bus provides some real advantages for modern multitasking systems. Commands from the CPU to a SCSI device can be queued, freeing the processor to return immediately to other tasks. The SCSI system can then prioritize—and possibly reorder—these commands and data transfers to maximize efficiency.

No One's Perfect One of SCSI's big advantages, flexibility, has also been its most serious flaw. The original SCSI standard included a wide variety of commands. With few exceptions, however, individual manufacturers choose which of these commands to implement.

Consequently, one SCSI device could not know in advance which commands another SCSI device would support, making it impossible to guarantee that any two SCSI devices could communicate. Users of early SCSI devices often had to get the host adapter and peripheral from the same manufacturer if they wanted them to talk.

Fortunately, the updated SCSI-2 standard partially solves the noncommunication problem. Among the changes imposed by SCSI-2 is an expansion of the mandatory command set: Any device claiming to meet the SCSI-2 standard must now respond to a minimum set of commands. This increases the chance—but does not guarantee—that two SCSI-2 peripherals from different manufacturers will work together. Nonetheless, insist on a SCSI-2 interface.

SCSI devices are connected in series, to use the electrical term. Any external devices you buy, therefore, should sport two SCSI connectors—one to connect to the previous device and one for the next. To operate reliably, a SCSI subsystem must be terminated at both ends—and only at the ends. Common resistors are used for terminators. Internally, these usually take the form of three single inline package components. Externally, plug-in terminators may be provided to accomplish the same purpose. If your system uses only internal or only external devices, then the host adapter must be one end of the chain and must contain a terminator. If you have both internal and external devices, the host adapter must be in the middle of the bus and must not be terminated.

Uniqueness Each peripheral on a SCSI bus must be assigned a unique ID number ranging from 0 to 7. During bus communications, the host adapter and peripherals use this number to identify commands meant for each device. The higher the number, the higher the priority given to the device during a bus contention: When two devices "talk" at once, the device with the higher number can talk louder. The host adapter is usually assigned ID 7—it shouts. Hard drives that must be accessed by ROM during a system boot or otherwise recognized before the operating system is installed might be restricted to an ID of 0 (the boot drive) or 1.

Finally, like any foreign hardware system, a SCSI adapter requires the installation of one or more device drivers. The device drivers translate DOS requests into commands that the SCSI devices can understand. The more devices you add to your SCSI bus, the more device drivers (and system memory) you'll need. Newer operating systems, such as OS/2 and Windows NT, contain built-in support for many popular SCSI host adapters and devices. Check that a driver for your device is available under your operating system before you buy it.

Your requirements for a unique peripheral or huge hard disk might drive you into the arms of SCSI. If so, the safest course may be to buy the host card and peripherals at the same time from the same vendor. Be sure to specify SCSI-2 compatibility and demand a written guarantee that all the components will work together.

You can reach ROBERT L. HUMMEL on CompuServe at 72241,2222 or by writing to *PC Computing*, 950 Tower Lane, 19th Floor, Foster City, CA 94404.

SOMEWHERE DEEP IN WINDOWS,™ SOMETHING IS EATING AWAY AT YOUR DISK SPACE AND OPERATING SPEED.

Inside Windows lurk the zombies of unused applications and the ghosts of every program you thought you had deleted. They're there, slowly but inexorably eating up storage and speed. UnInstaller tracks down these hidden menaces and exorcises them. All of them. Completely. For a suggested price of only $69.95, UnInstaller restores speed and disk space and keeps Windows as clean as the first time you used it. Only UnInstaller cleans Windows.

UNINSTALLER™ VERSION 2.0

UnInstaller is available at resellers everywhere.
Or call 800-922-3383 to order your copy today.

UnInstaller is a trademark of MicroHelp, Inc. Windows is a trademark of Microsoft Corp.

Circle 151 on reader service card.

This Month's Free Software and Shareware

All the public-domain and shareware programs and utilities featured in *PC Computing* each month are available from our online service, PC Contact, or on disk from Public Brand Software for a fee. Shareware requires additional payment to authors for continued use. This month's files are available in PC Contact's data library 3 (Utilities/Misc.). For information on ordering them from Public Brand Software, see below. Here's a sampling of the programs you'll find this month.

WINDOWS: HELP TO TEXT 188

SmartDoc Need a great way to navigate through Windows' Help files? Turn them into text files that you can edit with your favorite word processor or pull into a full text-indexed database. All it takes is SmartDoc, a shareware utility. Download SMTDOC.ZIP.

DOS: REGULAR RUNS 194

Torok Scheduler When you need to run specific commands on certain days, there's no better tool for the task than the Torok Scheduler. Tell it the day of the week, day of the month, or span of time between runs and it'll handle the job. Download TOROK.ZIP.

NETWORKING: GOPHER IT 210

HGopher 2.3 Want info from the Internet? Gopher beats anonymous FTP, and no Gopher beats HGopher 2.3. It's multithreaded—you can run up to three searches at once—and it has an intuitive Windows interface. You supply TCP/IP drivers, we supply the Gopher. Download GOPHER.ZIP.

TOP PICKS ON DISK

You can easily get all the public-domain utilities or shareware covered in this month's issue by calling Public Brand Software at (800) 426-3475 or (317) 856-7571. Ask for this month's Editors' Picks from *PC Computing*. They're available for $5 or less per disk (most disks have several utilities and programs on them), plus $5 for shipping and handling.

HOW TO JOIN

Current CompuServe or ZiffNet members type GO ZNT:PCCONTAC at any CIS ! prompt. Cost varies depending on which CompuServe plan you belong to and the speed at which you connect. For complete membership and hourly rate information, type GO RATES while online.

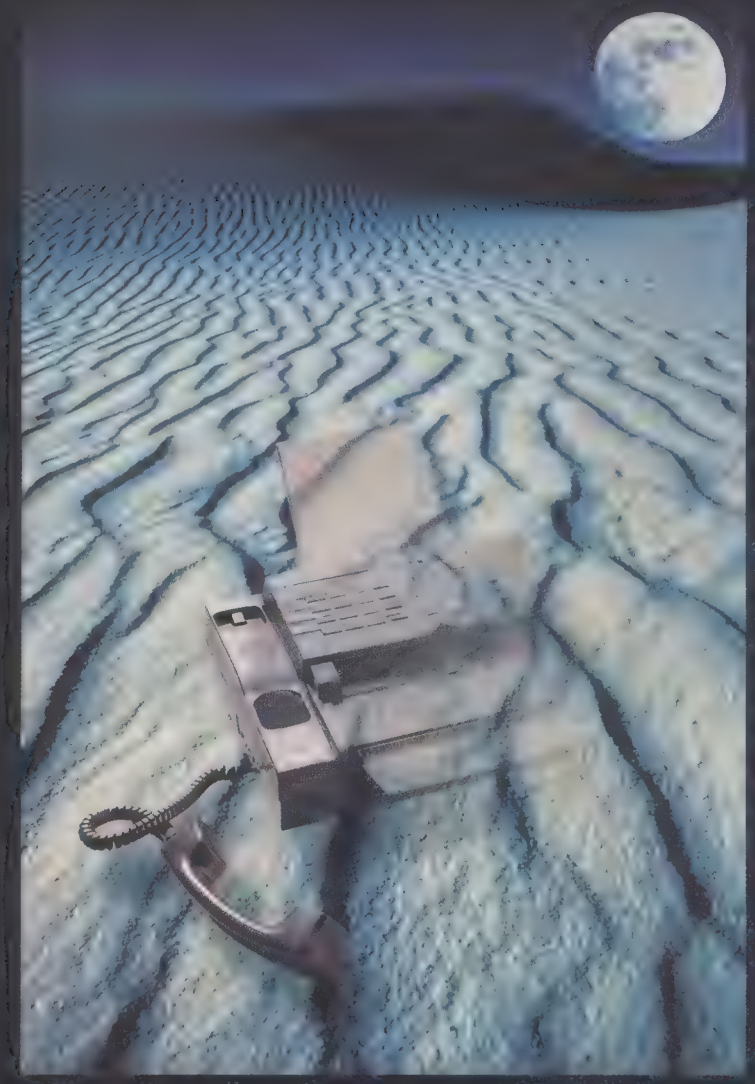
ZiffNet users pay a monthly membership fee of $2.95. This support fee provides a variety of free and chargeable services. For the latest information about these services, type GO ZNT:ZIFFHELP and download the files GOWORD.TXT and FREE.TXT from data library 1 (General Information).

Follow these steps to join ZiffNet and participate in the PC Contact forum:

1. Set these modem and software parameters: 7 data bits, even parity, 1 stop bit, full duplex.
2. Call CompuServe's customer assistance line at (800) 848-8990 (United States) or (800) 635-6225 (Canada). From other countries, dial CompuServe direct at (614) 457-8650. You can also call CompuServe with your modem. Set your modem as instructed above and dial (800) 346-3247. Press Enter when your modem connects. Type PHONES at the HOST NAME prompt, press Enter, and follow the onscreen prompts to find a local access number.
3. Dial the access number with a modem. When your modem connects to the network, press Ctrl-C to get the system's attention.
4. At the HOST NAME prompt, type CIS and press Enter.
5. At the USER ID prompt, type 177000,5300 and press Enter.
6. At the PASSWORD prompt, type PC/CONTACT and press Enter.
7. At the ENTER AGREEMENT NUMBER prompt, type PCC94 and press Enter.

INNOVATE OR DIE.

Are you using yesterday's technology to succeed in today's business world?
The Complete Communicator Gold and Complete Communicator EZ voice-fax-data modems will provide your business with the communication solution needed to survive in a competitive world. With extensive voice mail features like up to 1000 password protected mailboxes, private or public fax on demand, remote retrieval, pager notification, professionally recorded voice prompts as well as personalized greetings for individual mailboxes, you'll have the features of voice mail systems that cost thousands.

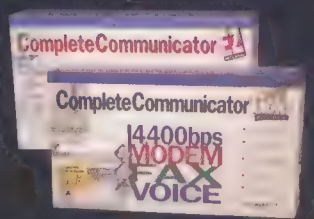


Want total performance? The power of the *Complete Communicator Gold*, with 14.4Kbps send and receive fax and throughput up to 57.6Kbps, makes faxing and transferring large documents and files quick and efficient. The *CCOM™ Gold* also supports business audio.

When speed is not your first priority, the *Complete Communicator EZ* is your business solution, providing many of the voice mail features of the *CCOM Gold* for half the cost.

Speed, ease of use, and the highest quality available in the world. Two great products from the company that innovated voice-fax-data modem technology. Your clients will think you just spent a small fortune. We'll know better.

Complete Communicator Gold: $179.00*
Complete Communicator EZ: $79.00*
*Estimated street price



yes Runs with NetWare

TheComplete PC
High Quality Communication Solutions

Circle 146 on reader service card.

See the difference.

The editors do.

Is there really a difference in monitors? You bet there is! There's also a difference in the companies that produce them! So, what's the difference? Well, it's in the performance, price, service and support. In fact, the editors of several major magazines, including PC World and PC Computing, found out that all monitors are not created equal. That's why they named the ViewSonic 17 the "BEST" monitor in their roundup. Here's what they said:

"Some folks crave performance. Some look for price. And then there are those who want it all. If you belong to the third crowd, the ViewSonic 17 is the monitor for you. The ViewSonic 17 stands out as the best all-around value in the review."
— PC World: April 1994

"Best color quality, best sharpness and best versatility – what more could we ask of the ViewSonic 17? Frankly, we were surprised that one monitor could do it all."
— PC Computing: January 1994

What sets this, and all ViewSonic color monitors, apart is the dedication by the company to supply high-performance, award-winning products at a reasonable price. And, our reputation bears out the excellent service and support we provide to our distributors, resellers and end-users. When they call with questions, they get action.

With its flat square screen, 0.27mm dot pitch and a maximum resolution of 1,600 x 1,280, it's no wonder the 17-inch* ViewSonic 17 has been touted by the press. To win these awards, you know the display must be crisp, sharp and picture-perfect. And with ViewMatch™ you can be assured that the screen image will match printed output.

For information on any of our full line of color monitors, call **800-888-8583**. FREE MAC ADAPTER AVAILABLE.

ViewSonic®
See The Difference!™

20480 Business Parkway Walnut, CA 91789
Tel: (800) 888-8583 or (909) 869-7976 Fax: (909) 869-7958
AppleLink: VIEWSONIC, Compuserve: 73374, 514 or FaxSonic: (909) 869-7318

*17" CRTs yield 15.5" to 15.7" diagonal viewable screens.
All products and brand names are registered trademarks of their respective companies

Circle 170 on reader service card.

GREAT COLOR, LOW PRICE

Printers: Color Is Definitely on the Wax

Six-month-old infants will grab the most colorful thing within their reach. We all know at least one corporate vice president who acts the same way. A report or proposal dressed with color gets read first and lingered over longer than drab monochrome memos. Ink jet printers are fine for spot color and pie charts. But for inexpensive continuous-tone images and 24-bit graphics, only thermal wax-transfer printers will do. While their quality keeps getting better, their costs continue to slump: A printer priced at $10,000 three years ago costs about $5,500 today.

Better models raise the industry-standard 300-dpi resolution to 300 by 600 dpi, which has a staggering effect on the quality of photographs and other halftone images. Also, the standard three-color (cyan, magenta, and yellow) transfer ribbon is quickly giving way to a four-color ribbon that adds black (CMYK ribbon).

Since color printers are designed for graphics, PostScript Level 2 emulation is a must—and you should make sure that a driver is included. Also, look for PCL 5 emulation; it's fast becoming the standard. You'll want at least 35 Adobe Type 1 fonts. Obviously, the more fonts you get, the better and faster you'll be.

Don't expect pages to fly from a thermal wax-transfer printer. Even with a fast RISC chip and 4MB of memory, you can expect a print speed of about 1 page per minute (ppm). Better models come with 8MB to 16MB of RAM, which will stoke performance somewhat. Anything less than 4MB and you'll finger-drum dents into your desk waiting for documents to emerge.

One way to goose performance if you're on a network is to send your print jobs through an Ethernet connection, instead of a parallel port. Few thermal wax-transfer printers come with these built in, but you should ask which interface options are available before you proffer your credit card.

While you're at it, ask about the cost of consumables. Ultimately, you'll pay more for wax ribbons and coated paper than for the printer itself. Incidentally, some vendors still claim that their printers will work with plain copier paper. Beware: We have yet to see one that lives up to this claim.

MARTY JEROME

PC Computing

SUBSCRIBER COURTESY VOUCHER

As a new subscriber you are entitled to receive a full year of PC/Computing for 52% less than the annual cover price. Or two years at 58% off. *FREE BONUS:* The all-new 1001 PC HINTS & TIPS 2-disk set — FREE with your paid subscription.

PLEASE CHECK:

☐ **12 issues**/$16.94 ☐ **24 issues**/$29.94
☐ Payment enclosed. ☐ Bill me later.

NAME (Please Print) 4SDDO

COMPANY

ADDRESS

CITY STATE ZIP

Basic one-year subscription $24.97; on newsstands $35.40. Canada and foreign add $16.00 per year. U.S. funds only. Canadian GST included. Please allow 30 days for shipment of first issue. FREE disks will be sent upon payment

SAVINGS STATEMENT

ANNUAL COVER PRICE
$35.40
REGULAR SUBSCRIPTION PRICE
$24.97
YOUR ONE-YEAR RATE
$16.94
BONUS STATUS
1001 PC HINTS & TIPS DISKS

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 66 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

PCComputing

P.O. Box 50253
Boulder, CO 80321-0253

GREAT COLOR, LOW PRICE

Printers: Color Is Definitely on the Wax

Six-month-old infants will grab the most colorful thing within their reach. We all know at least one corporate vice president who acts the same way. A report or proposal dressed with color gets read first and lingered over longer than drab monochrome memos. Ink jet printers are fine for spot color and pie charts. But for inexpensive continuous-tone images and 24-bit graphics, only thermal wax-transfer printers will do. While their quality keeps getting better, their costs continue to slump: A printer priced at $10,000 three years ago costs about $5,500 today.

Better models raise the industry-standard 300-dpi resolution to 300 by 600 dpi, which has a staggering effect on the quality of photographs and other halftone images. Also, the standard three-color (cyan, magenta, and yellow) transfer ribbon is quickly giving way to a four-color ribbon that adds black (CMYK ribbon).

Since color printers are designed for graphics, PostScript Level 2 emulation is a must—and you should make sure that a driver is included. Also, look for PCL 5 emulation; it's fast becoming the standard. You'll want at least 35 Adobe Type 1 fonts. Obviously, the more fonts you get, the better and faster you'll be.

Don't expect pages to fly from a thermal wax-transfer printer. Even with a fast RISC chip and 4MB of memory, you can expect a print speed of about 1 page per minute (ppm). Better models come with 8MB to 16MB of RAM, which will stoke performance somewhat. Anything less than 4MB and you'll finger-drum dents into your desk waiting for documents to emerge.

One way to goose performance if you're on a network is to send your print jobs through an Ethernet connection, instead of a parallel port. Few thermal wax-transfer printers come with these built in, but you should ask which interface options are available before you proffer your credit card.

While you're at it, ask about the cost of consumables. Ultimately, you'll pay more for wax ribbons and coated paper than for the printer itself. Incidentally, some vendors still claim that their printers will work with plain copier paper. Beware: We have yet to see one that lives up to this claim.

MARTY JEROME

COLOR PRINTERS

FOR **HIGH-QUALITY COLOR,** LOOK FOR THERMAL WAX

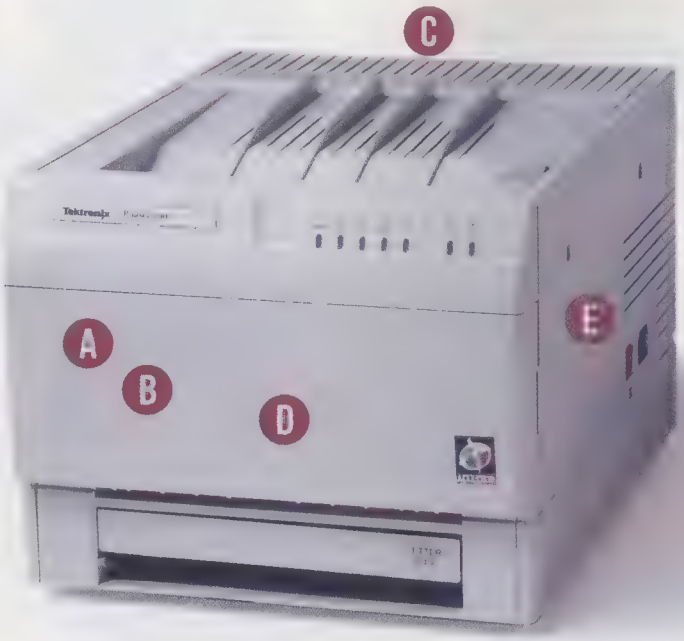
A Processor: Look for a 16MHz RISC CPU at least.

B RAM: 4MB, upgradable to 8MB.

C Interface: A parallel port is usually sufficient.

D Fonts: 35 Adobe PostScript Type 1 at the very minimum.

E Ribbon: A four-color ribbon will give you blacker blacks.



Emulations: PostScript Level 1 and 2 and PCL 5.

Print speed: 2 ppm.

Resolution: 300 by 600 dpi.

Features and options: Internal network interfaces, support for four-color ribbons (three colors plus black), EPA Energy Star compliance, ability to print on B-oversize paper.

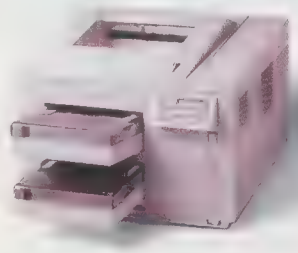
RED FLAGS: Be sure vendor provides a PostScript Level 2 driver; despite some claims, business-quality printing on plain copier paper isn't a reality yet, although many printers can manage low-weight, uncoated paper.

Direct to You ADVERTISERS' INDEX

VENDOR NAME	PAGE NO.	HOURS OPEN	800 NUMBER
SYSTEMS			
ACER	255-259	M-F 6-6; Sat 8-4 (PST)	800-230-ACER
Computer Discount Warehouse	267-270	M-F 7:30-7:30; Sat 9-5 (CST)	800-473-4CDW
Comtrade	265	M-Sat 7-7 (PST)	800-969-2123
Insight	263	24 Hours	800-927-3159
Midwest Micro	274-281	M-F 9-7; Sat 10-4	800-682-7248
PC's Compleat	247-249	M-F 24 Hours; Sat-Sun 10-8 p.m.	800-598-4727
Quantex Microsystems	241-245	M - Sat 9-9	800-787-8686
USA Flex	237	M-F 24 Hours; Sat-Sun 9-4	800-723-0334
VTech/Expotech	250-253	M-F 7-8:30; Sat 9-6; Sun 10-3 (EST)	800-284-3976
PERIPHERALS			
AMDEK	246	M-F 8:30-8:30	800-72-AMDEK
Computability	234-235	M-F 8-8; Sat 9-5 (CST)	800-554-9952
Computer Discount Warehouse	267-270	M-F 7:30-7:30; Sat 9-5 (CST)	800-473-4CDW
Envisions	285	M-F 6:30-5; Sat 9-1 (PST)	800-926-7226
First Source International	262	M-F 8-5; Sat 9-3 (PST)	800-474-9866
Insight	263	24 Hours	800-927-3159
L.A. Trade	282	M-F 8-5; Sat 10-12 (PST)	800-433-3726
Megahaus	284	M 8-8; TU-F 8-7; Sat 9-3(CST)	800-786-1187
Midwest Computer Works	254	M-F 8-7 (CST)	800-65-WORKS
Midwest Micro	274-281	M-F 9-7; Sat 10-4	800-682-7248
OmniFax	266	M-F 8-5 (PST)	800-221-8330
PC's Compleat	247-249	M-F 24 Hours; Sat-Sun 10-8 p.m.	800-598-4727
USA Flex	237	M-F 24 Hours; Sat-Sun 9-4	800-723-0334
PRINTERS			
Arlington Computer Products	240	M-F 7:30 - 7:30; Sat 9-5 (CST)	800-548-5105
Computability	234-235	M-F 8-8; Sat 9-5 (CST)	800-554-9952
Midwest Computer Works	254	M-F 8-7 (CST)	800-65-WORKS
OmniFax	266	M-F 8-5 (PST)	800-221-8330
USA Flex	237	M-F 24 Hours; Sat-Sun 9-4	800-723-0334
SOFTWARE			
Computability	234-235	M-F 8-8; Sat 9-5 (CST)	800-554-9952
Computer Discount Warehouse	267-270	M-F 7:30-7:30; Sat 9-5 (CST)	800-473-4CDW
First Source International	262	M-F 8-5; Sat 9-3 (PST)	800-474-9866
USA Flex	237	M-F 24 Hours; Sat-Sun 9-4	800-723-0334
MEMORY			
First Source International	262	M-F 8-5; Sat 9-3 (PST)	800-474-9866
L.A. Trade	282	M-F 8-5; Sat 10-12 (PST)	800-433-3726
WorldWide Technology	273	M-F 9 -7:30; Sat 10-6	800-636-6792
NOTEBOOKS			
Altima	264	M-F 8-5 (PST)	800-356-9990
Bondwell	239	M-F 7-7; Sat 9-4	800-627-6888
Computability	234-235	M-F 8-8; Sat 9-5 (CST)	800-554-9952
Innovation/Sunshine Computers	283	M-F 9-9; Sat 10-6; Sun 12-5	800-828-2992
Insight	263	24 Hours	800-927-3159
Midwest Computer Works	254	M-F 8-7 (CST)	800-65-WORKS
Midwest Micro	274-281	M-F 9-7; Sat 10-4	800-682-7248
PC's Compleat	247-249	M-F 24 Hours; Sat-Sun 10-8 p.m.	800-598-4727
SAGER	260-261	M-F 7-6; Sat 9-3 (PST)	800-669-1624
USA Flex	237	M-F 24 Hours; Sat-Sun 9-4	800-723-0334
STORAGE			
Insight	263	24 Hours	800-927-3159
First Source International	262	M-F 8-5; Sat 9-3 (PST)	800-474-9866

SPEC WATCH: Don't Settle for Less than These Specs

NETWORK LASER PRINTERS



Emulations: PCL 5, PostScript Level 2 with automatic emulation switching.

Print engine speed: At least 17 ppm.

Resolution: 600 dpi.

Processor: 16MHz RISC.

Resident fonts: 90 total—10 TrueType (matching Windows 3.1), 45 PCL 5, 35 PostScript.

RAM: 8MB.

Interfaces: Parallel and 10Base-T or 10Base-2 Ethernet, Token Ring, or LocalTalk.

Network support: Concurrent for Novell NetWare, Windows NT, and Windows for Workgroups.

Paper capacity: 1,000 sheets.

Warranty: One year with onsite service.

Features and options: SNMP support, particularly the ability to download printer drivers to all network printer users from a central node; EPA Energy Star compliance; legal-sized paper tray; LCD front-panel display.

WINDOWS DISPLAYS

Size: 17 inches, 20 to 21 inches for graphics applications.

Resolutions: 1,024 by 768; 1,280 by 1,024 for 21-inch monitors; some now support 1,600 by 1,280; noninterlaced.

Dot pitch: 0.28mm or smaller for 17-inch monitors, 0.31mm or smaller for 21 inch.

Vertical refresh rate: 72Hz or higher at all resolutions.

Tube type: Flat-square or Trinitron.

Controls: Front-panel or onscreen digital controls.

Features and options: Support for MPR II low-emissions standards, compliant with EPA Energy Star requirements, ability to save settings for different resolutions and refresh rates. For 21-inch monitors, use 1,600-by-1,200-pixel resolution.

Other requirements: Adjustable tilt-and-swivel base, video cable, antiglare coating or add-on filter, color controls, microprocessor-based controls.

RED FLAGS: Monitors with dot pitch above 0.31mm may seem fuzzy. Make sure the monitor supports the resolutions and particularly the refresh rates of your video card.

DESKTOP LASER PRINTERS

Emulations: PCL 5, PostScript option with automatic emulation switching and all ports active.

Print engine speed: 8 ppm.

Resolution: 600 dpi.

Resident fonts: 45 total; 10 TrueType fonts (matching Windows 3.1).

RAM: At least 2MB.

Interface: Bidirectional parallel.

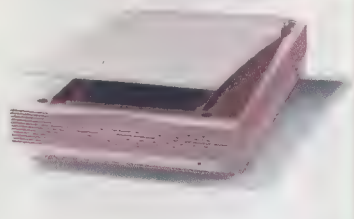
Paper capacity: 200 sheets.

Footprint: 260 square inches or less.

Features and options: HP-compatible font cartridges, RISC processor for 600-dpi models, toner included, EPA Energy Star compliance.

Other requirements: Toner cartridge, parallel cable, envelope tray.

FLATBED COLOR SCANNERS



Resolution: 400 to 600 dpi.

Image scanning capabilities: 24-bit color (16.7 million colors), grayscale (256 shades of gray), black and white.

Compatibility: Twain.

Interface: SCSI-2.

Image controls: External controls for adjusting brightness, contrast, and color of scan; adjustable resolution.

Bundled software: 24-bit image editing software, OCR software.

Features and options: Automatic document sheet feeder, transparency feeder, free replacement scanner bulb, color calibration feature.

Other requirements: Cables and SCSI adapter card included in price.

RED FLAGS: Watch for vendors that cite interpolated resolution rather than optical resolution. Interpolation uses software to fill in spaces between pixels. The quality of interpolation algorithms varies greatly.

Since 1982

ComputAbility

Consumer Electronics

K=302 7/94

800-554-9952

All credit approved orders in the 48 contiguous states, under 15lbs, are automatically upgraded to Airborne Express - 2 day delivery. Next day overnight express available for a small extra charge.

AIRBORNE EXPRESS

COMPUTERS

NOTEBOOK

EPSON

SPECIAL OFFER!

includes Epson 14.4 FaxModem PCMCIA Card:

High performance 486DX/33 processor, local bus video and 3.3Volt Technology

700 Mono 120 / 210	$2 059	$2 099
700C dual scan 120 / 210	$2 619	$2,719
700CX, active 120 / 210	$3 219	$3,379

SEE OPPOSITE PAGE FOR MORE NOTEBOOKS!

NETWORKING

NOVELL

Novell V 3.12 Authorized Dealer

5 User PC (5829-35)/CD (5829-36)	$625
10 User PC (5829-37) / CD (5829-38)	$1,419
25 User PC (5829-40) CD (5829-39)	$2 099
50 User PC (5829-41)/CD (5829-42)	$2 839

Novell Peer to Peer Authorized Dealer

Personal Netware Single User (5702-15)	$65
Personal Netware 5 User (5702-16)	$255
Starter Kits for 2 Users (5702-17)	$235
Expansion Kits to add 1 User (5702-18)	$145

ARTISOFT

LANtastic Network Operating System 6.0

Single User(0696-116)	$74 95
Coax Starter Kit (0696-122)	$315
Coax Add On (0696-123)	$149
TP Add On (0696-124)	$149
Simply LANtastic Add-On Kit (0696-151)	$97
Simply LANtastic Software Kit (0696-130)	$53
Simply LANtastic Starter Kit (0696-150)	$189

10Base-T

Artisoft Node Runner SI2000T (0696-112)	$79
3Com Etherlink II, 16 bit (8674-12)	$115
SMC Ultra Elite 16 bit (7890-21)	$99
Nat Informover NE2000+T 16 bit (5702-05)	$79
Intel EtherExpress 16 Flash (4384-35)	$115

COAX

Artisoft Node Runner SI2000C (0696-110)	$79
3Com Etherlink II, 16 bit (8674-08)	$115
SMC Ultra Elite 16 bit (7890 18)	$99
Nat Informover NE2000+C 16 bit (5702-08)	$89
Intel EtherExpress 16 Flash (4384-06)	$115

COMBO

3Com Etherlink II 16 bit (8674-54)	$135
SMC Ultra Elite 16 bit (7890-12)	$119
Nat Informover NE2000+ 16 bit (5702-11)	$99
Intel EtherExpress Flash C 16 Bit (4384-36)	$125

PCMCIA

Nat Informover NE4100C-1 16 bit Coax (5702 13)	$165
Nat Informover NE4100T 1 16 bit 10Base-T (5702-03	$165

CALL FOR SPECIAL QUANTITY PRICING

SYNOPTICS

10B T 16 Port 2800A Aui Non Managed (8386-01)	$639
10B T 2813 04 Aui 4 Exp Ports (8386-02)	$1 729
10B T 2803 Aui Term & Exp Ports (8386-03)	$729

SMC

10B-T 8 RJ45 + 1 Aui Port (7890 42)	$329
35in TP 10B-T with 12 RJ +2	$599

3COM

LinkBuilder FMS T P Hub

12 RJ45 1 Aui Stackable (8674 38)	$629
24 RJ45 1 Aui Stackable (8674 39)	$1 079

ALLIED TELESIS

AT MR410T 15 Aui to 4 10B T Micro Hub

External P S (0396 01)	$329
Internal P/S (0396-02)	$195

AT MR810T 15 Aui to 8 10B-T Micro Hub

External P/S (0396-03)	$359
Internal P/S (0396-04)	$209

PRINTERS

EPSON

AP-2250 / AP-3250	$121	$162
AP 3260 with Color	$179/$239	
LX 300 FX-870 FX-1170	$165	$264	$352
DFX-5000+ DFX-8000	$1 329	$2 249
LQ-570+ LQ-1070+	$235	$356
LQ-870 LQ-1170 LQ-2550	$438	$599	$882
Stylus 300 Ink Jet - NEW	$229
Stylus 800 Ink Jet (5 Rebate)	$249*

price reflects $25 rebate, good thru 6/30/94

Action Laser Printer 1500 1600	649	$939

NEC

Silentwriter M95 with FAX	$1 079
Silentwriter 1097	$1,349
SuperScript 610	$469

Primera™ COLOR PRINTER

High resolution thermal transfer printing Great for presentations & overheads $695

OKIDATA

ML320 ML321	$299 / $419
590 591	$419 / $569
395 395C	$949 $1,019
810 830+ 850	$809 / $1 079 / $949
400e / 410e	$489 / $639

QUANTITIES LIMITED!

HEWLETT PACKARD

HP DeskJet 520	$289
HP DeskJet 310 alone cutsheet feeder	$299 $375
HP DeskJet 560C	$569

TEXAS INSTRUMENTS

microMarc ink Jet	$245*
microWriter Basic, 5PPM Laser	$509
microWriter PS23 5PPM with PS	$679
microLaser Pro 600 PS23	$1 249*

*Price reflects rebate! Good thru 6/30/94!

Canon

BJ200E BJ 230 Ink Jet	$259* /$355*
BJ10SX	$209*
BJ 600 Color Ink Jet	$539*
LBP 430 860 Laser	$555* /$1 289*

*Prices reflect $30 rebate, good through 8/31/94

MODEMS

IMAGINATION™ NETWORK

5 HOURS FREE with the purchase of any modem!

ZOOM NEW LOWER PRICES! Windows

Free Prodigy Starter Kit w/ purchase of any Zoom Modem!

V 32 bis Send Receive 14,400 for DOS or Win

Internal / External	$105	$133
w/ Voice Int/Ext	$145	$169
Zoom 14 4 PKT with Voice	$189	$265
V Fast Class 28.8 Int Ext	$199	$219
Zoom 14 4 PC Int /EX Ext	$99 / $129	

Supra Corporation

SupraFaxModem internal 24/96 NEW!	$53
Supra 2400 External	$59
SupraFaxModem 144LC, Class 1 only External DOS Windows	$149
SupraFaxModem V 32 bis, Internal	
SupraFaxModem V 32 bis, Ext alone	$189
with Fax Software, DOS/Win	$199
Supra FaxModem 288/288 Ext	$229/$265
Supra Express 14 4 with RPI	$99

U.S.Robotics

Sportster 14 4 Int. w/Fax/Ext w/Fax	$122/$137
World Port Fax/Data 14 4 PCMCIA	$245

intel.

14 4 Fax Modem Int/Ext	$119/$139

AT&T

14 4 Fax Modem Int/Ext	$149/$185
AT&T Notebook PCMCIA 14 4 FREE DEL	$299
AT&T DataPort 20001	$399

TAPE BACK UP

COLORADO™ MEMORY SYSTEMS INC.

JUMBO - Low Cost Tape Backup

DJ10-120MB	$105
DJ20-250MB	$159
DJ25-525MB	CALL

JUMBO TRAKKER - External Parallel Printer Port Tape Backup System:

JT10(40-120)	$269
JT20 (80-250)	$315

POWERTAPE SYSTEM:

Includes Colorado Backup for DOS software 2GB Int Ext, Free Delivery!

PT10 525MB Tape Back Up Int	$945 $1,095
PT10 525MB Tape Back Up Int	$605

HARD DRIVES

Seagate

ST-3120A IDE	$165
ST-3145A/3243A IDE	$179/$195
ST-3290A/3391A IDE	$219/$285
ST-3550A	$315
ST-3491A/3655A IDE	$279/$369
ST-3390N/3550N 3655N	$375/$465/$515
FREE DELIVERY	
ST-31200N SCSI	$769
ST-11900N	$1,149
ST-11950N 12400N	$1,539/$1,449
ST-12500N/42100N	$1,725/$1,419
ST-43400N	$2,099

Maxtor®

IDE 7171A 7273	$189/$255
IDE 7345A/7546A	$269/$375
SCSI 7290S	$269

Quantum™

170 IDE / SCSI	$189 / $209
LPS 270 IDE SCSI	$235 $255
540 IDE / SCSI FREE DELIVERY	$379 . $409
PD 1600 SCSI FREE DELIVERY	$995

MICROPOLIS

FREE DELIVERY (contiguous 48 states)

1926 1936 SCSI	$1399/$2055
2210 2217 SCSI	$799/$1129
2210A / 2217A IDE	$799/$1129
2210AV / 2217AV	$899/$1199
4410S	$799

WESTERN DIGITAL Caviar

AC-1210 / AC-2250	$199/$225
AC-2340 / AC-2420	$265/$309
AC-2540	$415
AC-2730/AC-31080 FREE DEL	$609/$789

CONTROLLERS

adaptec

1522 SCSI Direct on Kit	$135
1542CF Single	$195
1542CF SCSI Master Kit / PLUS	$249/$305
2742T Kit NEW/Single NEW	$349/$319
2842 VL Master Kit	$299
Slim SCSI, APA-460 PCMCIA, Free Del	$289
AVA 1505 16 bit SCSI / 1515 CD ONLY	$95/$59
2940 PCI Kit	$289

Q logic NEW!

FastSCSI ISA/FL	$129/$139
FastSCSI VESA Local/FL	$195/$205
FastSCSI PCMCIA	$195
FastSCSI IQ-PCI	$319

FUTURE Windows **1680 SVP-ISA**

TMC-850 MCD CD ROM Kit	$55
1680 SVP-ISA 16 bit SCSI 2 with floppy support & CD ROM SCSI support	$129
TMC 3260 PCI	$105

OTHER

Seagate ST-02 SCSI 8 Bit Adapt w/FD Cont..$45

DTK PTI 227 2 Serial, 1 parallel 1 game port, 2 floppy disk controller, 2 embedded hard disk drive adapter $29

SPEAKERS

AC-3 NEW!	$175
ACS-50 / 150	$72 $109
ACS-100 / 300	$105 / $235

LOGITECH

Audio II Speakers	$129

YAMAHA

Yamaha Digital Speakers (YSTM10H)	$77

ACOUSTIC RESEARCH

AR Partner 22 Black/42 Gray	$75/$149
AR Partner 570 Gray/622 Gray	$279/$219

PLUG & PLAY

MicroSolutions

No Slot Drive, requires AC!

Backpack CD ROM Double Speed	$359
Backpack 250 Tape Drive	$329
Backpack Diskette Drive 1.2, 5.25	$155
Backpack Diskette Drive 1 4, 3.5	$145
Backpack Hard Drive 340	$419
Backpack 2 8 Floppy Drive	$189

MONITORS

CTX

6439ES, 14", 39DP, 1024x768	$209
6468ES, 14", 28DP, 1024x768	$259
1451GM, 14", 28DP, SVGA 1024x768	$279
1562GM, 15", 28DP, SVGA 1280x1024	$349
1765GM, 17", 28DP, SVGA 1280x1024	$715

NEC PC MULTIMEDIA **Multisync 4FGe**

SVGA, 14" 28mm dot pitch,1024x768 non-int	$305
3V 15" 28mm dot pitch 1024x768 non-int	$455
3FGe 15" 28mm dot pitch,1024x768 non-int	$549
4FGe,15" 28mm dot pitch,1024x768 non-int	$599
5FGe, 17" 28 mm dot pitch,1024x768 non-int	$955
5FGp, 17" 28mm dot pitch,1280x1024	$1 069
6FGp, 21" 28mm dot pitch 1280x1024	$1 959
3PG, 27" 75mm dot pitch	$2,765

NANAO

F3401W F550I	$669 / $989
F550iW / F560IW	$1 079 $1,335

NOKIA PC MULTIMEDIA **Multigraph 449E**

44BS, 14" 449E, 15"	$419 / $515
447B, 17"	$949
445X	$2,549

SCANNERS

Canon

IX 4015 Color Scanner, SCSI w/ interface Inc Ofoto software & Omni Page $819*

*Price reflects Rebate good thru 8/30/94

RELISYS

AVEC Three Pass, Flatbed, Color Scanners

2400 PC Omni Scan	$599
2400 PC Enhanced, PhotoShop, Omni Scan, Altamira Composer	$899
4800 PC Enhanced	$1,099

Red Single Pass Flatbed, Color Scanners

2412 PC/T	$1,299
9624 PC/T	$2,995

LOGITECH

Scanman 256 (gray scale)	$165
Scanman 256 with Omni Page Direct	$209
Scanman Color	$339
Scanman Color with Omni Page Direct	$379
FotoMan Plus	$529
Scanman Easy Touch/Power Page	$215/$469

EPSON •FREE Software! $50.00 rebate!

ActionScanner Scanner PC	$749
ES-800C Bundle	$999
•ES-800C Professional PC Bundle	$1 199

•Charisma from MicroGraphx

•Total Value of Package $499 00

*OFFER GOOD 5/1 THRU 7/31

POWER SUPPLY

TRIPP LITE "THE POWER PEOPLE"

Smart 400 500 600	$279 / $299	$329
Smart 750 / 900 1250	$419 / $519	$639
Power Alert Plus Novell/Unix	$62/$105
Power Adviser DOS	$62

BC Series Standby UPS Systems

BC 250 / 400 500	$95	$149	$179
BC 500LAN 600LAN	$189	$239
BC 900LAN / 1250LAN	$339	$455

Omnipower Line Interactive UPS

OMNI 500LAN/OMNI 600LAN	$249/$295

APC AMERICAN POWER CONVERSION LOWER PRICES!

Back Ups

250 / 400	$99	$155
450 / 600	$185	$255
900 / 1250	$359	$489

Smart Ups

400	$275	
600 / 900 /1250	$309 / $529 / $649	

FLOPPY DRIVES

Floppy Drives

3 5" without Frame 1 44MB PC-AT	$55

TEAC.

All Media Floppy

The All-in-One 3 5" & 5.25" Half Height Internal Floppy Drive $125

PCMCIA

FREE Delivery on all PCMCIA

MODEMS:

Intel S/R 14 4	$255
Hayes Optima S/R 14 4	$289
AT&T Keep In Touch S/R 14 4 Cell	$299
US Robotics World Port S/R 14 4	$245
Megahertz XJ1144 S/R 14 4	$269
Megahertz XJ2144 S/R 14 4	$295
Supra ComCard S/R 14 4	$289
Epson 14 4	$225

FLASH CARDS:

EPSON	
Flash Card 5/10/20MB	$329/$469/$839

NETWORKING:

NATIONAL SEMI CONDUCTOR	
InfoMover NE 4100T, 10BT	$165
InfoMover NE 4100MC-1 Coax	$165
3COM	
Etherlink 3TP	$245
Etherlink 3 Combo	$295

CONTROLLERS:

Adaptec Slim SCSI	$275
New Media Bus Toaster w/SCSI II cable	$235
Socket SR 700 I/O Card	$169

TOKEN RING:

IBM PCMCIA 16/4 TokenRing	$445

MEMORY CARD:

New Media SRam 1MB Type 2	$159
New Media SRam 2MB Type 2	$279

HARD DRIVES:

Maxtor 105MB Type 3 / 131MB	$429 $499
Ministor MP 85/170 w/Stacker	$279
Ministor MP 128/256 w/Stacker	$395
Seagate ST-7050P	$339

SOUND CARDS:

Turtle Beach Audio Advantage PCMCIA	$99
New Media WAVjammer	$249

MISCELLANEOUS:

PCMCIA for your DT- Dockit Socket	$169

MULTIMEDIA

ADS

VGA TV Elite Int / Ext	$179 $219
TV Elite A/V NEW!	$239
Game Zapper	$95

CREATIVE LABS

WAVE Blaster	$179
Video Blaster for Win/SE	$325/$235
Video Spigot	$249
TV Coder	$149

SIGMA DESIGNS

Reel Magic Lite	$289
Reel Magic SCSI Version	$359 $419
Reel Magic CD ROM Kit	$689

TURTLE BEACH

Maui wavetable synthesizer upgrade	$159
Tahiti	$259
Cresendo FREE DELIVERY	$399

LOGITECH

Movie Man	$215

VIDEO BOARDS

DIAMOND

Speedstar Pro, 1MB / VLB	$115	$115
Stealth 24 ISA VLB	$155	$155
Stealth Pro ISA 1MB / 2MB	$215	$289
Stealth Pro, VLB 1MB, 2MB	$219	$295
Stealth 32 VLB 2MB	$239
Viper VLB 2MB PCI 2MB	$329	$349
Video Star	$325
Video Star Pro - FREE DELIVERY	$499

ATI

VGA Wonder GT Windows Accel	$155
ATI Graphics plus 2MB	$229
ATI Ultra Pro 2 MB ISA / VLB	$265
ATI Ultra Pro EISA 2MB	$375
Graphics Pro Turbo 2MB ISA or VLB or PCI	$369
Graphics Wonder Machine ISA/VLB	$155 $155

Trident

GXE64 PCI 1MB / 2MB	$175	$249
GXE64 VLB 1MB 2MB	$175	$249
GXE64 Pro PCI	$355
9GXE 1280 x 1024 NI, SVGA		
LVL 10 1MB ISA VLB	$239	$249
LVL 11 2MB ISA VLB	$349	$349
LVL 12 3 MB ISA/VLB	$429	$429
LVL 14 4MB ISA/VLB	$679	$679

Hercules

Graphite ISA 1MB HG210	$195
Graphite Power ISA 1MB PG310	$229
Graphite Power VLB 1MB PG610	$229
Graphite Power ISA 2MB PG420	$335
Graphite Power VLB 2MB PG720	$335
Dynamite Power 2MB ISA/VLB	CALL

TECH INFO: (414) 357-8181 • FAX: 414-357-7814 • HRS (CST): M-F 8am-8pm, Sat 9am-5pm

Since 1982

ComputAbility

Consumer Electronics

K=302 7/94

Computer Shopper Best Buy OF 1993

800-554-9952

WINNER OF EIGHT BEST BUY AWARDS!

P.O. Box 17882
Milw, WI 53217

BEST SELLING NOTEBOOKS!

TOSHIBA

NEW!

T1910CS Dual Scan Passive 486SX/33, 33MHz, 4MB, 200MB Hard Drive $2,059
T1950 CS Dual Scan Passive 486/DX2, 40MHz, 4MB, 200MB Hard Drive $2,319
T1950 CT Active Matrix Color 486/DX2, 40MHz, 4MB, 200MB Hard Drive $2,999
T3400 Monochrome, 486SX/33, 33MHz, 4MB, 120 Hard Drive $1,929
T3400 CT Active Matrix Color 486SX/33, 33MHz, 120MB Hard Drive $3,429
T4700 CT Active Matrix Color-Dockable 486/DX2, 50MHz, 8MB, 320MB Hard Drive $4,989
T4800 CT Active Matrix Color Intel 486/DX4, 75MHz, 8MB, 500MB Hard Drive $5,689

EPSON

Action Note: 4SLC2/50, 486 SLC/50 4MB: 80MB / 120MB /180MB / 180MB w/o Modem ..... $1,319 / $1,389 / $1,489 / $1,389
Action Note 4000 SubNotebook: 486 SLC/334, 4MB: 80MB / 120MB / 180MB ..... $1,285/$1,319/$1,359
Action Note 500C, 486 SLC2/50, 4MB - passive color: 120MB / 180MB ..... $1,899 / $1,999
Epson 700 Mono 120MB / 210MB ..... $1839 / $1879
Epson 700C Dual Scan Passive: 120MB / 210MB ..... $2,399 / $2,499
Epson 700CX Active Matrix: 120MB / 210MB / 260 ..... $2,999 / $3,159 / $3,279

Add Epson's 14.4 PCMCIA Fax Modem to any notebook *for only* $225

See opposite page for Epson specials!

NEC

Versa E: 486SL DX2, 4MB, Active Matrix Color:
40EC: 40MHz, 120MB / 250MB ..... $3,819 / $4,229
50EC: 50MHz, 209MB / 340MB ..... $4,499 / $4,919
75EC: 486 DX4 75MHz, 340 MB, Active Matrix Color $5,249

TEXAS INSTRUMENTS

TravelMate 4000, 486 SX25, Adv. Color 4MB/120MB $1,849
TravelMate 4000, 486 DX2/50, 200MB Dual Scan $2,769
TravelMate 4000, 486 DX2/50, Active Color 4MB/200MB $3,359
TravelMate Desktop Intelligent decking System $799
TravelMate 4000E WinDX 4/75, 340MB $4,069
TravelMate 4000E WinDX4/75, 455MB $4,959

TM4000M Multimedia with PCMCIA slot:
486SL, SX/25MHz, 120MB Monochrome / Passive Color ..... $2,019 / $2,359
486SL, SX/25MHz, 200MB Active Matrix Color ..... NEW! $3,189
486SL, Intel DX/75MHz, 340MB Active Matrix Color $4,959

SEE OPPOSITE PAGE FOR MORE NOTEBOOKS!

- Airborne: All credit approved orders in the 48 contiguous states, under 15lbs, are automatically upgraded to Airborne Express - 2 day delivery. Next day overnight express available for a small extra charge.
- One of Wisconsin's Top 10 Women Owned Businesses.
- Corporate, Government & School POs Welcome.
- VISA MasterCard No Surcharge on Credit Cards.
- Most Orders Shipped within 48 hrs.
- Software Shipping only $6 per order, not per title. Hardware: 5.5% - Min. $5.
- C.O.D orders welcome, with only a $6.00 charge. No Airborne COD.
- We Ship Latest Version of Software Available.
- All Products Sold Carry Manufacturers' Full Warranties & Documentation.
- APO, FPO HI, AK Puerto Rico & Canadian orders welcome: 6% - Min. $6. All orders outside contiguous 48 United States are shipped 1st Class Mail Insured or private carrier. 15% - Min. $15. If delivery cost exceeds calculated amount, you'll be billed additional.
- Call for Free Catalog & Items Not Listed

Personal & company checks allow 14 working days to clear. Prices fluctuate beyond our control & may change for better or worse. Not responsible for typographical errors. Defective returns must have a Return Authorization number. Call our 1-800# to obtain a Return Authorization or your return will not be accepted. Shipping & handling are non refundable. All sales are final. All returns are subject to a restocking fee.

*Free Delivery applies only to the contiguous 48 states

Exclusive CD ROM Bundles!*

Since 1982 ComputAbility Consumer Electronics

CD ROM Drive & Interface Options	Bare Drive	16 Bit CD only SCSI-2	16 Bit Model	Premium 3D SCSI-2 MV	Pro 3D MV	Sound Blaster SCSI-2	Sound Blaster SCSI-2 ASP	Adaptec Audio Machine	7 Title MPC Bundle
Chinon 535 Internal	$299	$358	$394	$466	$586	$490	$520	$643	add $79
Chinon 535 External	$385	$451	$487	$572	$692	$589	$619	$749	add $79
Mitsumi FX001D	$159 (w/ Sound Blaster 16 MCD = $294 or 16 MCD ASP = $328, or Media Vision Premium 3D MCD=$319)								add $79
NEC 3Xi Internal	$425	$484	$520	$585	$705	$609	$639	$769	add $79
NEC 3Xe External	$459	$518	$554	$639	$759	$663	$693	$823	add $79
NEC 4X External	$939 Quadruple Speed! Quantities Limited Call Now!								add $79
Sony CDU-33A	$169 (w/ Sound Blaster 16 MCD = $304 or 16 MCD ASP = $338, or Media Vision Premium 3D MCD=$314)								add $79
Toshiba 3401B Internal	$315	$374	$410	$482	$602	$506	$536	$659	add $79
Toshiba 3401E External	$415	$481	$517	$602	$722	$619	$649	$779	add $79
Toshiba 4101 Internal - New!	$209	$268	$304	$376	$496	$400	$430	$553	add $79
Plextor 3028i Dbl Speed + Int.	$265	$324	$360	$432	$552	$456	$486	$609	add $79
Plextor 5028e Dbl Speed + Ext.	$365	$431	$467	$552	$672	$569	$599	$729	add $79
Plextor Quad Speed	$475	$534	$570	$642	$762	$666	$696	$819	add $79

FREE KODAK PHOTO CD ACCESS WITH ANY NEC CD-ROM Drive thru 7/30/94

"Add $79" Special 7 Title Bundle includes:
- Toolworks Multimedia Encycolpedia
- Chessmaster 3000
- Mavis Beacon Teaches Typing MPC
- US Atlas MPC
- World Atlas MPC
- Animals MPC
- Mario is Missing MPC

*Prices good with the Purchase of any CD ROM Drive or Upgrade Kit (at time of purchase only)

CD-ROM BUNDLE RAMA

Buy 3 for $59* or 5 for $99*

Adventures in Heaven
America Premium Shareware
Animals! San Diego Zoo
Arthur's Teacher Trouble
Audubon Birds
Audubon Mammals
Beauty & the Beast
Carmen World Deluxe
Capital Hill
CD Game Pak II
Chess Master 3000MM MPC Pro
CIA World Tour
Clip Media II
Clipart Warehouse
Classic Movie Clips:
- Horrors
- Science Fiction
- Trailers Spectacular
- Vicious Vixens

Complete Bookshop
Cookbook Heaven
Deathstar Arcade
Dinosaur Adventure
Eco Quest
Encyclopedia of Sound
Eternam
Garbo
Gardening
Giga Games
Graphic Textures
Guinness Book of Records '93 MPC
HAM Radio
Hugo's House of Horrors
Interactive Storytime V. 1 or 2
It's A Wonderful Life
Jokes & Pranks
King Quest 5
Kodak Photo CD Access
Loom
Lovin' In The 60's
MacMillans Childrens Dictionary
Magazine Rack
Mario is Missing Deluxe
Mavis Beacon 3.0 MPC
Mayo Clinic for Windows
Mixed up Mother Goose
Monkey Island
Multimedia Audio Collection
National Geographic Mammals
New Basics Electronic Cookbook
Oceans Below MPC
PC Sig 12th Edition
Peter & th Wold
ProPhone Bus. Ed DOS
Right College by Arko
ROM Material
Secret Weapons of the Luftwaffe
Selectware Jukebox
Solar System
Sound Effects Library
Space & Astronomy
Space Quest 4
Space Shuttle MPC
Sports Illustrated Almanac
Star Wars Chess MPC
Time Table of History: Science & Innovation
Too Many Typefaces
Toolworks Ref Library
US Atlas V 4 w/ Video MPC
US Atlas with Automap
US Presidents
Wave Pool
Window Ware
Wing Commander/Ultima VI
World Atlas V 4 w/ Video MPC

Accessories to add to your Bundle (Each counts as one title)
CD Caddy 4 Pack
Portable CD Case holds 20 ea.
CD Cleaning System
CD Lens Cleaning System
Digital Headphones
Sound Master Volume Control
CD3 CD Storage - holds 48 CDs

*With the purchase of any CD-ROM Drive or Upgrade Kit from ComputAbility buy 3 for $59 or 5 for $99
*Offer good at time of purchase only!

Where the Top 50 Software Titles are Always on Super Sale!

1. MS DOS 6.21 Upgrade 49.95
2. MS Word 6.0 for Windows 294.95
3. MS Excel 5.0 for Windows 294.95
4. Lotus 123 Release 4.01 for Windows 294.95
5. QEMM 7 ..... 59.95
6. MS Access 2.0 for Windows 299.95
7. MS Power Point 4.0 for Windows 299.95
8. WP 6.0 DOS 309.95
9. MS Windows 3.11 ..... 88.95
10. Procomm Plus 2.01 for DOS 68.95
11. MS Office 4.2 Standard for Win 447.95
12. Quicken 7.0 for DOS 42.95
13. Quattro Pro 5.0 for DOS or Win ..... CALL
14. Norton Utilities 8.0 ..... 112.95
15. WinFax Pro 4.0 for Windows 77.95
16. MS Publisher 2.0 for Windows 87.95
17. Procomm Plus 1.02 for Windows 93.95
18. After Dark for Windows V.2.0 ..... 29.95
19. Stacker 4.0 ..... 91.95
20. PC Anywhere 5.0 for DOS 112.95
21. Paradox 4.5 for Windows 136.95
22. WP 6.0A for Windows 309.95
23. Netware 3.11 ..... CALL
24. Quicken 3.0 for Windows 39.95
25. MS Works 3.0 Win 85.95
26. ViSio 2.0 for Windows 116.95
27. Core Draw 4.0 for Windows 374.95
28. Approach 2.1 for Windows 94.94
29. Uninstaller 44.95
30. Corel Draw 3.0 for Windows 124.95
31. OS/2 2.0 for Windows 77.95
32. Lotus Freelance Graphics for DOS V.4.0 ..... 303.95
33. Claris File Maker Pro 2.1 for Win 119.95
34. Virus Scan DOS or Windows 79.95
35. Check It Pro Analyst for Windows 81.95
36. MS Windows for Workgroups 3.11 ..... 137.95
37. SimCity 2000 ..... 39.95
38. MS Flight Simulator 5.0 ..... 43.95
39. PrintShop Deluxe 1.2 w/Animals DOS or Win 46.95
40. MS Money 3.0 for Windows 24.95
41. MS PC Works 3.0 for DOS 94.95
42. Compuserve Win Membership 26.95
43. MYOB 105.95
44. Card Shop Plus 26.95
45. Saber LAN Workstation 114.95
46. Presentation Task Force 4.0 for Win 87.95
47. Hijack Pro 2.0 Windows 79.95
48. Quick Books 2/Quick Pay Bundle DOS or Win 126.95
49. 3D Home Architect 51.95
50. MS Visual Basic 3.0 w/ ODK for Win $299.95

Circle 143 on reader service card.

CD-ROM BUNDLES

CREATIVE

Game Blaster CD 16 Upgrade Kit - NEW! $375
Digital Edge 3X Upgrade Kit $685

MEDIA VISION

Fusion Double CD 16 ..... $279
MV0400 Reno Drive & Internal $275
MV 2000 Family Deluxe $335
MV 3000 Super Deluxe $399
MV 4000 Premier Deluxe $499
MV 5000 Pro Deluxe with Triple Speed $709

TURTLE BEACH

Monterey Upgrade Kit FREE DEL $699

For Bare Drives See Grid!

SOUND CARDS

CREATIVE

Sound Blaster 16 Basic Value $105
Sound Blaster Deluxe Value $65
Sound Blaster Pro Deluxe Value $85
Sound Blaster 16 Multi CD $135
with adv. signal processing $169
Sound Blaster 16 Scsi 2 ..... $169
with adv. signal processing $199
Sound Blaster AWE32 ..... $265

MEDIA VISION

Pro Spectrum 16 Basic $79
Pro Audio Spectrum 16 ..... $99
Pro Audio Studio 16 ..... $119
Premium 3-D SCSI-2 / MCD ..... $145 / $145
Pro 3-D $265

TURTLE BEACH

Audio Advantage PCMCIA Free Del $99
MultiSound Monterey $349
Maui Wavetable Synthesizer Upgrade $159
Wave for Windows $69 95
(w/ purchase of any Sound Card) $39

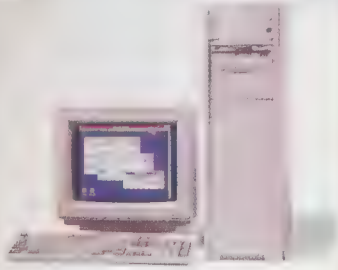
OTHER

Advanced Gravis UltraSound $129
Advanced Gravis UltraSound Max $189
Logitech SoundMan 16 ..... $77
Logitech SoundMan Wave 16 ..... $182
Diamond Sonic Sound $215
Dig-Speech Portable Sound+ $145
RAP-10 Roland Audio Prod Free Del $489
Adaptec Audio Machine $329

TECH INFO: (414) 357-8181 • FAX: 414-357-7814 • HRS (CST): M-F 8am-8pm, Sat 9am-5pm

SPEC WATCH: Don't Settle for Less than These Specs

NETWORK SERVERS



CPU: Intel 486DX2/66, 486DX4, or Pentium.

RAM: 16MB, expandable to 128MB.

CPU RAM cache: 256K.

Display: 14-inch Super VGA color or monochrome.

Video card: Super VGA with 512K of RAM.

Hard drive: 1GB SCSI-2.

Bus: Eight EISA slots with two VL-Bus or PCI.

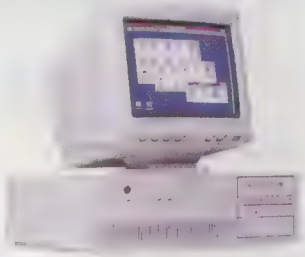
Drive bays: Two full-height 5¼-inch, two half-height 5¼-inch with front-panel access, two 3½-inch.

Features and options: RAID-5, DAT backup, uninterruptible power supply, dual-speed CD-ROM drive, built-in SCSI-2 controller, Ethernet controller, protected power switch to prevent accidentally turning the power off.

Other requirements: FCC Class A or better, UL listed.

RED FLAGS: Systems with ISA bus or slotted RAM are less upgradable. Database and other application servers need more CPU power than a file server.

MIDRANGE DESKTOP SYSTEMS



CPU: Intel 486DX2/66, 486DX4, or Pentium.

Secondary cache: 256K four-way set-associative.

Memory: 8MB, expandable to 32MB, 36-pin SIMMs.

Floppy drive: 3½-inch.

Hard drive: 400MB or larger IDE or SCSI-2.

Video: VL-Bus or PCI Windows accelerator, 15-inch monitor or larger with 72Hz refresh at 1,024 by 768 pixels.

Slots: Eight ISA slots for full-sized case (including two VL-Bus or PCI), three ISA slots for small-footprint case with integrated VL-Bus or PCI video and drive.

Drives and bays: One 3½-inch 1.44MB and one 5¼-inch 1.2MB floppy drive, five half-height 5¼-inch bays.

Features and options: Dual-speed or faster CD-ROM drive, sound card or built-in sound capability, two parallel ports, two COM ports, and keyboard and mouse ports.

RED FLAGS: Watch for Pentium-upgradable systems that don't include a ZIF socket, secondary CPU cache, or lots of slots for extra RAM.

SUBNOTEBOOK PCS

CPU: Intel 33MHz 486SX.

Display type: 7½-inch backlit passive, dual-scan passive, or active-matrix LCD.

Weight: 4 pounds or less.

Size: Smaller than 8½ by 11 by 2 inches.

Keyboard: 90 percent of full-sized keyboard.

RAM: 4MB, expandable to 16MB.

Hard drive: 80MB or larger.

Features and options: Removable hard drive, high-speed internal fax modem, integrated pointing device, infrared keyboard connection.

Other requirements: External floppy, at least one PCMCIA Type II slot, small recharger (5½ by 3 by 1½ inches or smaller).

RED FLAGS: Subnotebook displays and keyboards entail compromise—try before you buy, or make sure there's a money-back guarantee with no restocking charge. In addition, many subnotebook batteries run down quickly, particularly when you're using color. Make sure the battery is easy to replace. User-installable RAM is also a plus.

NOTEBOOK PCS

CPU: 33MHz 486.

Display type: 9½-inch or larger backlit dual-scan passive- or active-matrix color LCD with accelerated local bus. Look for adjustable contrast and brightness controls.

Weight: Less than 7 pounds without AC adapter; total traveling weight less than 9 pounds.

Size: Smaller than 10 by 12 by 2 inches.

RAM: 8MB, expandable to 20MB.

Hard drive: 120MB.

Ports/slots: Parallel, 9-pin serial, PS/2 ports; one PCMCIA Type III slot or two Type II slots.

Features and options: Ability to swap out floppy drive for second battery, removable hard drive, user-installable RAM, integrated pointing device. Pen pointing device and touch screen can be useful in some instances. Look for notebooks that support new Duracell standard-sized rechargeable batteries.

Other requirements: Standby mode, pop-up battery gauge, 6-by-3-by-3-inch (or smaller) battery recharger.

Arlington Computer Products . . . Great Prices and Service Since 1984!

- PC Magazine: *"—Arlington offers worry-free mail order purchasing!"*
- PC Computing: *"Courteous service and terrific technical support!"*
- PC Computing Review: *"5 Star Pricing!"*

10 Year Anniversary!

HEWLETT-PACKARD

Laserjet IV/IV+ . . . . $1369/$1479
Laserjet IVP w/Toner $979
Laserjet IV L w/Toner $675
Laserjet IV SI w/Toner . . $2989
Laserjet IVM+/MP . $1949/$1379
2MG/4MG . . . . . $99/$159
8MG Upgrade $319
Deskjet 550C $429
Deskjet 520/560 . . . . . $289/$569
Deskjet 1200C $1399
Deskjet 1200C P/S $2099
IIC Scanner $959

OKIDATA

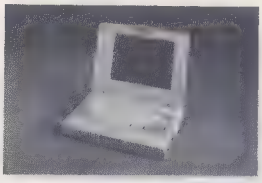
ML320 . . $295 ML395 . . $959
ML321 . . $415 3410 . . . $1199
ML380 . . $205 OL400E. $495
ML520 . . $365 OL410E. $645
ML521 . . $489 OL810 . . $899
ML590 . . $409 OL830 . $1089
ML591 . . $559 OL850 . $1189
Okilaser 2MG $129
DocIt 3000 . . . . . $1799
DocIt 4000 . . . . . $2129

Canon

BJ-10SX $209*
BJ-200E $255*
BJ-230 . . . . . $359*
BJC-600 . . . . . $535*
BJC-800 . . . . . $1419*
LBP-430 . . . . . $549*
LBP-860 . . . . . $1269*

*After Rebate
**Dual Color - $1899

CANON 486-SL/25 Mhz - $1199**



• 120 MG • Fax Modem

EPSON PRINTERS

FX870 . . . . . $259
FX1170 . . . . $345
LQ570+ . . . $235
LQ870 . . . . $425
LQ1070+ . . $355
LQ1170 . . . $589
LQ2550 . . . $879
DFX5000 . $1299
DFX8000 . $2189
Stylus 800 . . . $269
Stylus 1000 . . $439
Action 3250 . . $169
Action 1000 . . $579
Action 1500 . . $639
Action 1600 . CALL

Thousands of Printers in Stock!!! — Most shipped same day!!!

Panasonic Office Automation

2023 . . . . $179 4400 . . . . $499
2130 . . . . $199 4410 . . . . $529
2124 . . . . $295 4430 . . . . $639
2624 . . . . $389 4440 . . . . $999
3123 . . . . $269 5400 . . . . $799
4410/4450I 2 MG . . . $125

NOTEBOOKS

Canon 486-120 MG $1199
Canon 486-120 MG-Color $1889
Canon Notejet 200 . . . . $1929
Epson 486 SLC-50 . . . . $1349
Sharp PC-8650 Color . . $2679
TM4000/WINSX Color . $1849
TM486/DX 2/50E Color $3299
TM4000E DX 4-75 . . . . . $4399

NETWORKING

Netware 3.12 5 User $579
Netware 3.12 10 User . . $1299
Netware 3.12 25 User . . $1849
Netware 3.12 50 User . . $2349
Netware 3.12 100 User . $3349
Netware 4.0 10 User . . . $1599
Lantastic Starter 5.0 . . . . $409
2000C Noderunner $159
NE2000/5-Pack . . . . . $89/$369
SMC Hub T/P 12 . . . . . $579
Ethercard +/+16 . . . . $89/$115
3 Com EtherLink III $115
3 Com EtherLink 5-Pack $499
Intel Ether 16 . . . . . $89
Intel Ether 16-5 Pack . . . $429
Intel Ether 16-20 Pack . $1599
Intel Flash/5-Pack . . $99/$475
Intel Token 16/4 . . . . . $339
Intel Netport EL $355
Xircom Pocket Ethernet $249

SCAN. & DIGIT.

Epson Action Scanning . $759
Scanman 256 Omni Page$185
Summasketch 12×12 . . . . $255
Summasketch 12×18 . . . . $499

NEC

Jetmate 1000 . . . . . $269
P6200/6300 . . . . . $399/$599
Superscript 610 . . . . . $569
Model 1097 Laser $1349

MONITORS

NEC

3 FGE/3V $539/459
4 FGE $589
5 FGP $1079
5 FGE $969
6 FGP $1959

MAG

DX/MX 15F 15" . . . $435/$495
DX/MX 17F 17" . . . $689/$879

NANAO

F340IW/F560IW . . $649/$1309
F550I/F550IW . . . . $949/$1039
T560I/F760IW . . . $1599/$1979

VIEWSONIC

15/17G . . . . . $429/$769
17 . . . . . $939
20/21 . . . . . $1519/$1789

VIDEO BOARDS

ATI Graph Ultra + 2MG . $195
ATI Graph Prof 2 MG . . . $269
Diamond Viper 2 MG . . . $329
1024 VGA 16 Bit 1 MG . . . $59

CHIPS

1MB/4 MB Simms . . $49/$159
Cyrix DRx2-20/40 . . . . . $249
Epson Action 2 MG $139
HP 2MG/4MG . . . . . $99/$159
OKI Laser 2MB $129
Intel 80387 SX/DX . . . $75/$85

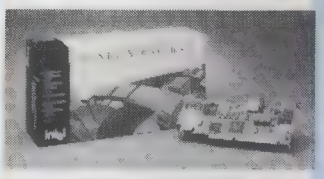
intel. — OVERDRIVE

Sx2-50 Dble 20-25 Mhz . $199
Dx2-50 Dble 20-25 Mhz . $275
Dx2-66 Dble 33 Mhz $379

MODEMS

intel.

Int. 14.4/14.4 Fax $115
Ext. 14.4/14.4 Fax $135
PCMCIA 24/96 . . . . . $129
PCMCIA 14.4/14.4 . . . . . $235



SatisFAXtion MODEMS

200/300 . . . . . $199/$219
400 14.4/14.4 Fax $259
400 Ext 14.4/9600 Fax . . $289

Hayes

Accura 14.4/Int/Ext. $149/159
Accura 28.8 Ext. $325
Optima 96/14.4 . . . . $309/$339
Optima 28.8 Ext. $409
Pocket 14.4 . . . . . $289
PCMCIA 14.4 . . . . . $289

PRACTICAL PERIPHERALS

14.4 Fax Int/Ext . . . $119/$139
14.4 Pocket $269
28.8 Int/Ext . . . . . $265/$275
PCMCIA 14.4 . . . . . $265

U.S. Robotics

Terbo Dual Std. Fax $679
14.4 Int/Ext. . . . . $109/$125
Sportster 14.4 Int. Fax . . $119
Sportster 14.4 Ext. Fax . $135
Courier Terbo Int. Fax . . $345
World PortPCMCIA 14.4 $239

GVC

14.4 w/Fax Int/Ext . . . $95/Call
28.8 Int/Ext . . . . . $179/$199

SOFTWARE

Aldus Pagemaker 5.0 . . . $499
Corel Draw 4.0 . . . . . $359
D Base IV $379
Harvard Graphics $299
Lotus 123 2.4/3.1 . . $279/$325
Microsoft Windows 3.1 . . $79
Microsoft Office $449
Microsoft DOS 6.2 . . . . . $69
Q & A 4.0 . . . . . $179
Word Perfect 6.0 . . . . . $249
Word Perfect Windows . $269

DRIVES & TAPES

Dual Floppy $99
3½" 1.44 . . . . . $49
Connor 250 . . . . . $139
Connor Parallel 250 . . . . $289

COLORADO

Colorado Jumbo 120 . . . . $99
Colorado Jumbo 250 . . . $155
Colorado Trakker 120 . . $215
Colorado Trakker 250 . . $305
Qik 80 Formatted Tape . . $19
Power Tape 2400 1.2 Int. $939

AMERICAN UPS

250 . . . . . $99 600 . . . . . $259
400 . . . . . $155 900 . . . . . $369
450 . . . . . $185 1250 . . . . $485

CD ROM OPTICAL DISKS

Chinon 535 Int/Ext $305/$389
Fusion Double CD $369
Sound Blast 16 SCSI 2 . $169
Texel 3028 Int/Ext . $289/$329
Mitsumi Int DS $149

Triple Speed!!!

NEC 3Xi $415
NEC 3Xe $449
NEC 3Xp/4X Pro . . $379/$899

SEAGATE HARD DISKS

260 MG 3290A $225
341 MG 3390A $279
452 MG 3550A $379
535 SCSI 3655N $539
542 MG IDE 3655A $409

Arlington Computer Products, inc.

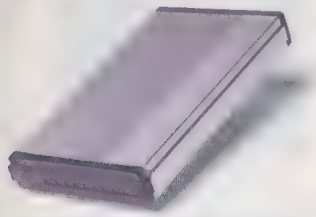
1979 CANDY
MT. PROSPECT, IL 60056

800-548-5105
CUSTOMER SERVICE AND IN ILLINOIS 708-228-6333
SHIPPING 708-228-9748
TECHNICAL ASSISTANCE 708-228-1470
We Export! FAX 708-228-0516

Circle 161 on reader service card.

Direct to You SPEC WATCH: Don't Settle for Less than These Specs

ALL-IN-ONE MODEMS



Transmission rate: 14,400 bps without compression, 57,600 bps with compression.

Supported standards: V.32bis (data speed), V.42 (error correction), V.42bis (data compression), CCITT Group 3 Class 1, Class 2, and CAS (fax).

Compatibility: Hayes command set.

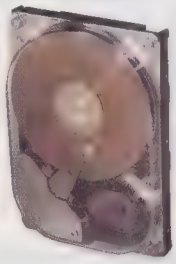
Port selection: COM1 through COM4.

Bundled software: DOS and Windows communications and fax software, OCR software.

Features and options: Integrated voice, data, and fax; onboard digital-signal processor and coprocessor; 16550 universal asynchronous receiver/transmitter (UART); LCD display on external modems; upgradability to V.Fast (V.34) protocol.

RED FLAGS: Fax modems without fallback transmission rates may not connect with other machines.

HARD DRIVES



Performance: 13ms or faster vendor-rated average access time; if vendor reports performance as average seek time, 10ms or faster.

Capacity: 400MB or greater.

Size: Half height or full height, depending on your system's drive bays.

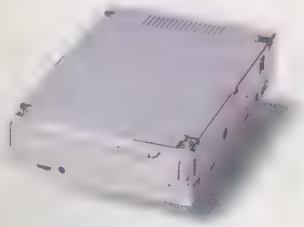
Interface: IDE for desktop systems with up to 1GB of capacity. For larger capacities, get a SCSI-2 drive interface.

Features and options: Self-parking heads, diagnostic and partitioning software, spindle synchronization for use in redundant arrays of inexpensive disks (RAIDs), support for single-ended differential SCSI (if it's a SCSI drive).

Cache or buffer: 64K to 256K (a 512K segmented cache is top-of-the-line).

RED FLAGS: Mounting brackets and cables should come with the disk; look for a 30-day full money-back guarantee, a three- or five-year warranty, and a mean time between failure rating of at least 200,000 hours.

CD-ROM DRIVES



Access time: 200ms.

Transfer rate: Dual-speed drive—150 Kbps to 300 Kbps.

Ondrive cache: 64K.

Interface: SCSI-2.

Compatibility: High Sierra and ISO-9660 (data), CD-Audio, and Kodak Photo CD (still photography) with multisession support (MPC 2).

Audio: Output jack and volume control.

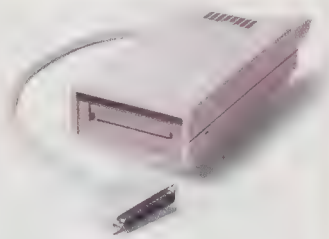
Packaging: Internal.

Features and options: Bundled CD-ROMs, single-handed operation, newer CD-ROM drives support 450 and 600 Kbps transfer rates, support for new CD-ROM XA (extended architecture) is a nice option but support for this standard appears to be waning, double doors are useful in dusty environments, caddy-less designs are more convenient.

Other requirements: If you buy a CD-ROM drive that requires a disk caddy, make sure one comes with it.

RED FLAGS: Proprietary interfaces and drives that don't support MPC 2 will probably work with less software and hardware.

SINGLE-USER TAPE DRIVES



Storage capacity: 250MB when compressed.

Packaging: Internal 3½-inch drive preferred; external for PC-to-PC portability.

Interface: Floppy drive, IDE, or SCSI.

Cartridge type: DC6250, DC2120, or equivalent, preformatted; for higher capacities, look at 4mm DAT drives.

Bundled software: Windows and DOS backup software that supports either QIC-80 or QIC-525 tape format.

Other requirements: Floppy interface splitter or other interface cable, mounting hardware for internal drives.

RED FLAGS: Ensure full QIC-80 compatibility for mini-cartridge drives; avoid proprietary controller cards—they may take up an extra slot in your system; try for a price below $1 per megabyte.

FEEL THE POWER WITHOUT THE PINCH

Monochrome
$1299
486SLC-33, 4MB RAM/ 120MB HDD

Dual Scan Color
$1999
486SX-33, 4MB RAM/ 120MB HDD

Superior Performance At Excellent Price...

An unbeatable offer at just $1299... Check out the most aggressively priced 486SLC-33MHz with 120MB hard disk capacity, 4MB RAM on board. To further sweeten the deal, we are throwing in an internal data/fax modem, carrying case, soft vinyl leather-look cover at no additional cost to you, and that's not it... No trackball is better than a mouse for heavy Windows users, Bondwell bundles a notebook mouse for you free of charge.

Your Dependable Supplier...

With over 18 years of history and nine years of solid notebook/laptop manufacturing and design expertise, Bondwell gives you the best combination of pricing, performance and support. Simply because we care, you can count on Bondwell to provide continue support on parts for years you own the product. Because we control the complete design and manufacturing process, we have total control over the quality of our systems and we stand behind this committment of quality.

486SLC-33

- **486SLC-33MHz**
- Internal Cache
- **4MB RAM**
- **120MB Hard Disk Drive**
- 3.5" 1.44MB Floppy Drive
- Backlit 10" VGA 640 X 480
- **Simultaneous Display**
- Printer Port, Serial Port, VGA Port
- **PS/2 Keyboard Port**
- 85-Key Inverted "T" Keyboard
- **Dual Battery Packs** (Quick Charge)
- Battery Life 6Hr. with Power Management
- 100-240V Power Adapter
- Advanced Power Management Features
- **MS-DOS 6.2 Installed**
- Weighs 6.2 Pounds
- Measures 8.6 X 11.7 X 1.95 Inches

FREE
2400/9600 Data/Fax Modem
Notebook Mouse
Carrying Case
MS-DOS 6.2

Ready to Ship

	10" Mono		Dual Scan Color
	120MB	200MB	120MB
486SLC-33	$1299	$1399	-
486SLC2-50	$1349	$1449	-
486SX-33	$1399	$1499	$1999
486DX-33	$1749	$1849	$2249
486DX2-50	$1899	$1999	$2399
486DX2-66	-	$2199	$2599

18 YEARS EXPERIENCE

Bondwell®

CALL 800-627-6888

Canada: 416-405-0711, Outside USA: 510-490-4300, ext.768

Major credit cards accepted. 30 days money back guarantee. One year warranty. Life time toll-free support. Prices and specifications are subject to change without notice. Bondwell Industrial Co. Inc. USA 47485 Seabridge Drive Fremont CA94538

EU9404A

Circle 109 on reader service card.

Winner of 22 Best Buys including "Best Overall Peripheral Supplier" Computer Shopper Jan. 1994

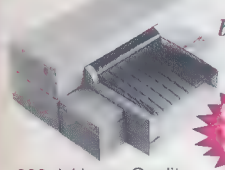
Best Buy of 1994

USA Flex... Name Brands for Less!

HEWLETT® PACKARD
Authorized Dealer

FLEX SPECIAL
HP DeskJet 550C Printer

HP's high-quality twin-cartridge black and color printer

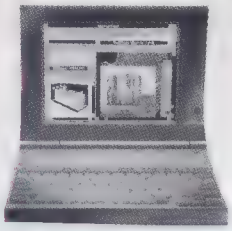


$429
C2121A

Order Today! Limited Quantity

- 300 dpi Laser Quality
- Dual inkjet cartridge system for Simultaneous true black and color printing
- Up to 16.7 million colors
- Feeds up to 100 sheets (letter or legal)
- 3-Year Warranty-the longest in the industry

Ink cartridge Color *51625A* /Black *51626A*. .....$29/$25



COMPAQ
LTE Lite/25E
At Our Lowest Prices Ever!

The Compaq LTE Lite 25E features Intel 386SL-25MHz processor, 64K Cache, 4MB RAM (Max. 20MB), 8.5"x 11"x 2", 6.3 lbs., 9.5" high contrast active matrix mono LCD, MS-DOS, Windows & Integrated TrackBall

Limited Quantity

LTE Lite/25E 84MB Hard Drive
138000-003.....$999

LTE Lite/25E 120MB Hard Drive
138000-004.....$1099

IBM *ThinkPad®* 350, 350C & 500 Notebooks

Starting At...
$1599

Authorized Advanced Products Dealer

ThinkPad 350 & 350C • Intel 486SL 25MHz • 8K Cache • 4MB RAM • 3.5" FD • PCMCIA Type II Slot • TRACKPOINT II™ Pointing Device • 9 Hrs battery life • DOS 5.02 • Prodigy • IBM HelpWare® • 1 yr. carry-in Warr.

Model 350 9.5" Monochrome 16-Bit VGA, 640 x 480, 64 shades of gray, 5.2 lbs. **250MB** *2618LOA* $2099

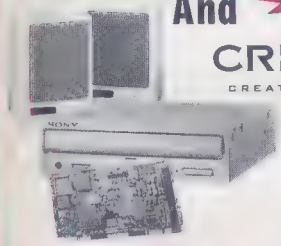
Model 350C 9.2" Color Single Scan STL Backlit LCD, 16-Bit VGA, 640 x 480, 256 Colors, 5.7 lbs. **125MB** *2618NOA* / **250MB** *2618POA* .....$1999/$2399

ThinkPad 500 • 486SLC2 50/25MHz • 4MB RAM • 1 Type II PCMCIA Slot • Integrated TrackPoint II™ pointing device • 3.5-9 Hrs. Battery Life
85MB *260308N* / **170MB** *260317N*.....$1599/$1899

SONY® And CREATIVE

Unbelievable Offer!

CREATIVE LABS, INC.



Only...
$299
SONYBLASTER (B)

Sony CDU-33A Double-Speed Internal Drive
300KB/sec transfer, 350ms access, 64KB buffer

Sound Blaster 16 Audio Board by Creative Labs
8-/16-bit stereo sampling & playback, 20-voice, ASP and WaveBlaster upgradable, plus more.

Speakers, cables & instructions

TEXAS INSTRUMENTS

Introducing the NEW TM4000M Notebook Series

NEW

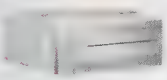
As Low As...
$2029

- 4MB RAM • 3.5" FD
- Ext. NI Monitor Support: 1024x768/256 Colors
- 1 Type III PCMCIA Card Slot• MIDI I/F • 16-bit Sound Card
- NiMH Battery (3-4 hrs.) • Int. Pointing Device, Speaker & Microphone • MS-DOS 6.2, Windows for Workgroup, Adaptec EZ-SCSI, PCMCIA Card & Socket Services

TM4000 M Mono 486 SL Enhanced SX/25 MHz, 9.5" Display, 120MB HD, 6.1 lbs. *9792534-0001* $2029
TM4000 M Active Matrix Color 486 SL Enhanced SX/25 MHz, 8.4" Display, 200MB HD, 6.4 lbs. *9792533-0001*....$3199
TM4000 M Advanced Passive Color 486 SL Enhanced SX/25 MHz, 8.2" Display, 120MB HD, 6.4 lbs. *9792532-0001* $2369
TM4000 M Active Matrix Color i486 DX4/75 MHz, 8.4" Display, 344MB HD 6.4 lbs. *9794061-0001* $4979

HEWLETT® PACKARD
Authorized Dealer

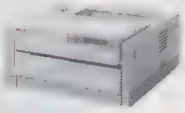
NEW AT USA FLEX!



HP LaserJet 4L Printer
- *Double Printer Memory*
- *The Best 300-dpi Output Available* with HP RET and Microfine Toner
- *EconoMode Printing Saves Money* by Cutting Toner Use In Half
- *Intelligent On/Off Save Electricity*
- *Scalable & Rotatable Typefaces* with HP's enhanced PCL 5

B1-LASER4L **$659**

4 PPM, 26 scalable fonts, 1MB, 100 sheet capacity



HP LaserJet 4P Printer
- *The Best 600-dpi Output Available* with HP RET and Microfine Toner
- *EconoMode* cuts toner use in half
- *Powersave* uses 50-70% less energy. EPA Energy Star Program approved
- *45 Scalable Typefaces*
- *Custom Media Handling* Prints 3"x5" and up to 42 lbs.
- *Full Range Of Expansion Options*

B1-LSR4P **$959**

4 PPM, 35 scalable & 10 TrueType fonts, 2MB, 250 sheet capacity

PRINTERS

HEWLETT-PACKARD
HP DeskJet 520 - New 600 DPI.....$289
HP DeskJet 500C - Color.....$389
HP DeskJet 550C - Color.....$429
HP DeskJet 560C - New Color.....$579
HP DeskJet 310 - Portable.....$299
HP LaserJet 4L - New at Flex.....$659
HP LaserJet 4P - New at Flex.....$959

EPSON
LASER PRINTERS
ACTION LASER 1500.....$649
ACTION LASER 1600.....$949

DOT MATRIX PRINTERS
AP 2250 .....$124 LQ-870.....$439
LX300 .....$164 LQ-1170 .....$598
AP 3250 .....$162 LQ-2550 Clr. $899
AP 3260 .....$179 DFX-5000+ $1319
LQ-570+.....$239 DFX-8000 .....$2249
FX-870 .....$268 Stylus 300 .....$229
FX-1170 .....$349 Stylus 800 .....$244*
LQ-1070+.....$364 Stylus 1000 ....$439
*After $25 Mail in Rebate. Ends 6/30/94.

PANASONIC
LASER PRINTERS
KX-P4410 ..... $529 KX-P5400 ....$799
KX-P4400 .....$499 KX-P4440 ..... $999
KX-P4430 ..... $659

DOT MATRIX PRINTERS
KX-P1150 .....$129 KX-P1624 .....$369
KX-P2023 .....$199 KX-P3123 .....$249
KX-P2123 .....$239 KX-P3124 .....$319
KX-P2124 .. $309 KX-P3624 .....$399

CANON
BUBBLE JET PRINTERS*
BJ-10SX / 200e / 230.....$219/$259/$359
BJC-600 / 800 / 820.....$549/$1469/$1599
LBP-430 / 860.....$559/$1339
*Prices include $30 Rebate.

PRINTERS (cont.)

NEC
Silentwriter 610 / 1097.....$479 / $1379

TEXAS INSTRUMENTS
microMarc™/ Color .....$249** / $389
microWriter $509
microWriter PS23/PS65 .....$679/$939
microLaser Pro 600 PS23/PS65.....$1299*/$1469*
Pro 600 imaging cartridge.....$159
*After $60 mail-in rebate. Ends. 6/30/94.
**After $30 mail-in rebate. Ends. 6/30/94.

SHARP
JX-9400/JX-9460PS .....$479/$949
JX-9660PS.....$1249

MONITORS

NEC
14" SVGA .....$309 17" 5FGe $999
15" 3V .....$469 17" 5FGp $1099
15" 3FGe .....$559 21" 6FGp $1999
15" 4FGe $619

FLEXVision
14" VGA Mono/1024x768 NI . . .$119/$265
15" 1280X1024 .....$339

CTX
14" .39mm $219
14" .28mm int./ E Star & MPR-II$259/$279
14" .28mm NI/ E Star & MPR-II $275/$299
14" .28mm NI (1462GM) $329
15" .28mm int./.28mm NI .... $389/$399
17" .28mm NI $765

MAG Innovision
14" LX1450LG $299
15" DX15F/MX15F-L .....$449/$499
17" DX17F/MX17F-L .....$699/$879
17" MX17FG $929

SONY
17" CPD-1730E/GDM-17E1 .....$999/$1179
20" GDM2036S/GDM2038 .....$1949/$2069
Universal MAC cable adaptor $17.95

VIDEO CARDS

ATI Technologies
GRAPHICS ULTRA+ 2MB $215
GRAPHICS ULTRA™ PRO 2MB ISA/VLB/EISA .....$329/$329/$399

DIAMOND
SPEEDSTAR PRO 1MB ISA/VLB...$109/$115
STEALTH 24 1MB ISA/VLB.....$159/$165
STEALTH PRO ISA 1MB/2MB.....$219/$289
STEALTH PRO VLB 1MB/2MB.....$229/$299
VIPER 2MB VLB/PCI.....$339/$359

HERCULES
Dynamite Pro ISA 1MB/2MB.....$159/$199
Dynamite Pro VLB 1MB/2MB.....$159/$199
Dynamite Pro PCI 2MB.....$249
Graphite Pro ISA 1MB/2MB .....$249/$379
Graphite Pro VLB 1MB/2MB .....$249/$379
Graphite 2MB Upgrade Kit.....$159

ORCHID
Fahrenheit VA ISA 1MB $169
Fahrenheit 1280+ ISA 1MB $139
Fahrenheit 1280+ VLB 1MB/2MB ..$159/$199
Celsius VLB 1MB/2MB ....$199/$249

MODEMS

HAYES Int./Ext.
PCMCIA Optima 144 + Fax.....$289
ACCURA 24.....$69/$75
ACCURA 144+fax144.....$155/$169
Optima 144+ fax144.....$369/$379
Optima 144+ fax Pocket Ed.....$299

US ROBOTICS Int./Ext.
PCMCIA World Port 14,400 FAX.....$259
Sportster 14.4 FAX .....$125/$145
World Port 14,400 FAX/Data Pocket ... $239
Courier V.Fast 28.8k data/14.4 fax .....CALL

BOCA Int./Ext.
2400 data, 96/48 S/R Fax $39/ $59
2400 data, 96/96 S/R Fax $85/ $105
14.4K with Fax.....$119/ $149
Pocket 24/96 Data/Fax.....$69
Pocket 14.4K with Fax.....$189

NOTEBOOKS

EPSON
ActionNote 4000 80MB..... .....$1299
ActionNote 4000 120MB $1349
ActionNote 4000 170MB $1399
ActionNote 4SLC2-50 120MB W/Modem..... .....$1429
ActionNote 4SLC2-50 180MB.....$1429
ActionNote 4SLC2-50 180MB W/Modem.....$1529
ActionNote 500C 120MB W/Modem $1979
ActionNote 500C 180MB W/Modem .. $2069
ActionNote 700 120MB/210MB. ..... $1859/$1929
ActionNote 700C 210MB... ... .$2549
ActionNote 700Cx 210MB $3199

TOSHIBA
T1910T/1910CS 200MB .... $1499/$2049
T1950CS 200 MB $2299
T1950CT 200 MB/320MB .... $2899/$3149
T3400/T3400CT 120MB.....$1899/$3399
T4700CS 200MB/320MB.....$3149/$3379
T4700CT 200MB/320MB.....$4579/$4929
T4800CT 500MB $5599
T6600C, C/CD ....$6199/$6699

TEXAS INSTRUMENTS
TravelMate 4000E WinSX/25 Mono.. ... .$1699
WinDX2/50 Mono 200MB..... .....$2429
WinSX/25 Adv. Pass. Color 120MB ...$1849
WinDX2/40 Color 200MB..... .....$2439
WinDX2/50 Dual Scan Color 200MB ...$2789
WinDX2/50 Act. Matrix Color 200MB ..$3379
WinDX4/75 Active Matrix Color 340MB/455MB ....$4449/$4949
TravelMate 4000 WinDX/25 Mono 120MB/200MB $1999/$2179
TravelMate DeskTop Intelligent Docking System $799

SHARP
PC8150T Dual-scan color, 200MB $2399
PC8650T Active-matrix color, 200MB ..$2999

USA★FLEX
Code # PC0704

1-800-723-0334
USA Flex, Inc. 471 Brighton Drive, Bloomingdale, IL 60108

No Surcharge On These Credit Cards

FedEx® Available

Circle 202 on reader service card.

BE CHOOSY!

Quantex gives you the choicest features at the choicest prices.

Some companies offer you plenty of features that wind up costing you plenty of money. Others lure you with low prices—for little more than a keyboard, a monitor, and a box. At Quantex, it's never one or the other. Quantex is dedicated to providing complete systems that are loaded with the latest technology, like our Multimedia Systems and Pentium™ Performers. With high quality and low prices, Quantex is the best value around. But you don't have to take our word for it. Go ahead and compare. You'll find that with Quantex, you can afford to be choosy.

QUANTEX
Microsystems, Inc.

intel inside

Achieve Peak Multi-

Quantex brilliance enhances your ingenuity with

Whether you're working at home or in the office, when you've got work to do, you want it done right — and fast. That's what Quantex had in mind when we created these powerful multimedia systems. That's why we've bundled the easiest, handiest, no-nonsense software around into our systems. Like **Microsoft® Encarta. Microsoft Money**. And the award-winning **Borland® Office 2.0**.

Suite Victory

You want professional results no matter what you do. And that's the whole idea. So, we're helping the cause with **Borland Office 2.0**, a powerful software suite that incorporates three of PC Computing's Most Valuable Product award winners — **WordPerfect® 6.0** for **Windows™, Borland Paradox 4.5 and Borland Quattro Pro 4.5**.

Each of these applications were chosen to be the best for their capabilities and ease of use. To maximize productivity, Borland Office brings them together in a format that allows quick maneuverability among the word processing, spreadsheet and database applications, as well as convenient software management.

With Quantex's proven performance and Borland Office's indisputable efficiency, all you get is winning results.

Smooth Talking

When your ideas are good, you want to get them out fast. That's why Quantex has installed a 14,400 baud high-speed fax/modem into our multimedia system. Because faster transmission means lower on-line bills, you'll be saving as you're working.

QUANTEX
Microsystems, Inc.

Two Tower Center Blvd., East Brunswick, NJ 08816, Tel: (908) 563-4166, Fax: (908) 563-0407

media Performance

suite success.

What's more, Quantex has also hooked you up to **CompuServe®**, an on-line service that links you up with the world. Literally.

With CompuServe, you gain access to hundreds of forums, scores of professional groups, and over 17,000 databases! And with a one-month free subscription from Quantex, answers, advice and valuable information are right at your fingertips.

What's more, Quantex will also preload America On-Line and Prodigy® software into your multimedia system. This way, your world of information and communication possibilities is limitless!

The CD-ROM Resource

When it comes down to business, the multimedia advantage is mass storage. In addition to **Borland Office 2.0 on CD**, Quantex brings the multimedia advantage to you with **Microsoft Encarta**. It's a great investment in knowledge, with 29 volumes of information packed onto a single CD-ROM disc, illustrated with vivid graphics, sounds and video.

But Quantex knows that multimedia means enjoyment, too. And the **Kodak® Photo-CD Access Software** and **Photo Sampler** is sure to make you smile. With a wide array of browsing and editing functions, you can always relive the memories.

Service to Ease Your Mind

When it comes to a Quantex computer, you don't have to worry, period. Because not only are our computers guaranteed reliable, we back it up with comforting services and warranties. This includes a one-year Free Parts and Labor warranty, as well as one-year Free On-Site service. Plus, if you ever have a question, we give you lifetime toll-free technical support. What's more, we're so confident about the quality of our products, you get a 30-day money back guarantee, no questions asked. How's that for peace of mind?

PARADISE FOUND HERE PARADISE

intel inside

Multimedia Systems

Q486DX2/66VM-4 $1995

- IntelDX2™ 66 Processor
- 8MB RAM, 128KB Fast Cache
- 420MB 12ms IDE Hard Drive
- 3.5" 1.44MB Floppy Drive
- VESA Local Bus Graphics Accelerator, 16.7 million colors, 1MB exp. to 2MB
- VESA Local Bus IDE controller
- 15" Digital Color Monitor with Flat Screen and .28mm dot pitch
- 11-Bay Mid-Tower case
- 101-Key enhanced keyboard & Mouse
- 14,400 Baud Fax/Modem w/software
- Double-spin CD-ROM drive, multisession Kodak Photo-CD ready
- 16-Bit Stereo Sound Card w/speakers
- MS-DOS & WFW 3.11
- 3 CD Discs: Borland Office 2.0*, Microsoft Encarta Encyclopedia , and Kodak Photo CD
- MS-Money & MS-Entertainment Pack
- Prodigy, Compuserve, and America On-Line software preloaded

Q486DX2/50VM-4 $1975
Q486DX4/100VM-4 $2295

QP5/60PM-2 $2395

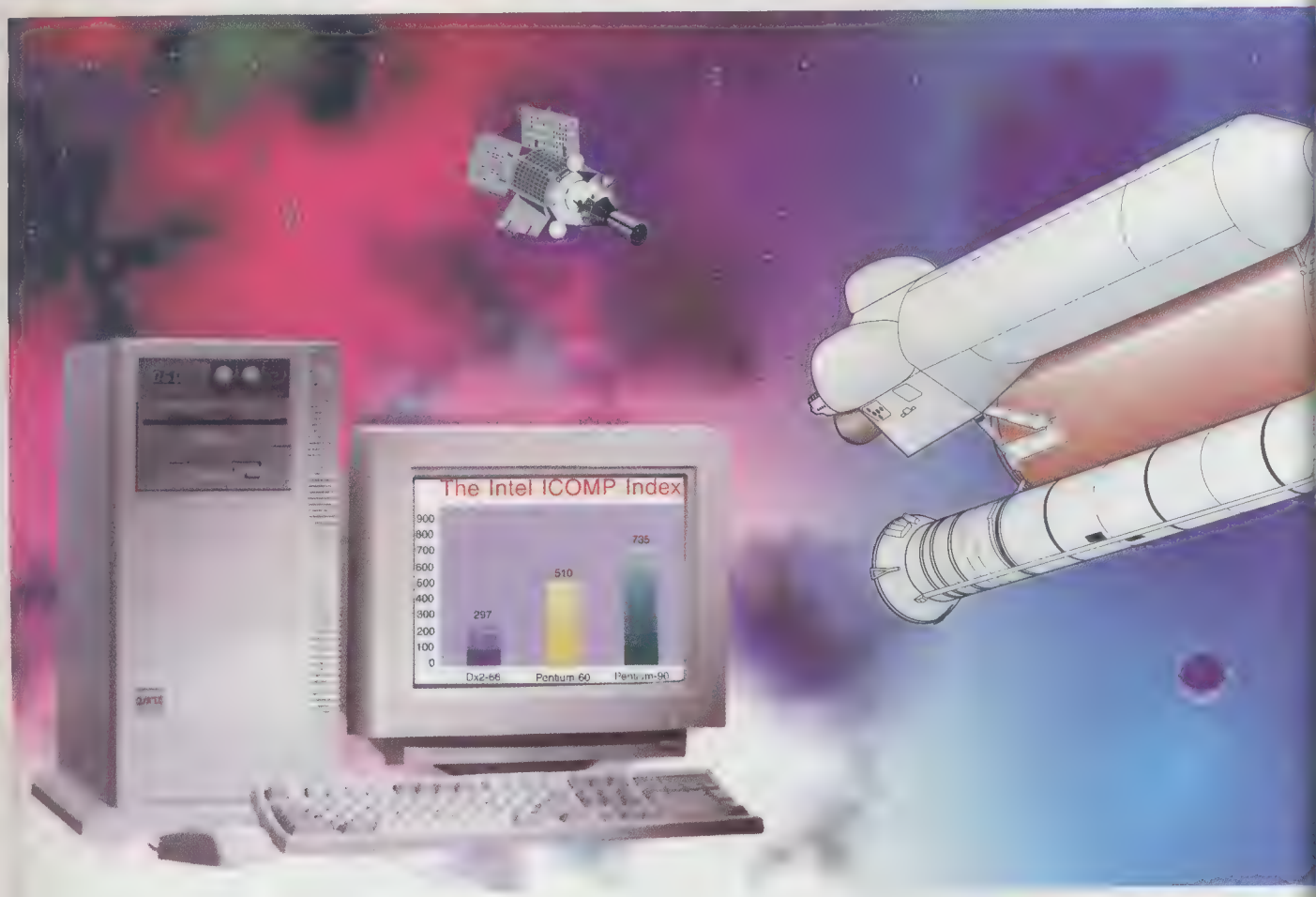
- Intel Pentium™ Processor
- 8MB RAM, 256KB Fast Cache
- 540MB 12ms IDE Hard Drive
- 3.5" 1.44MB Floppy Drive
- PCI Local Bus Graphics Accelerator, 16.7 million colors, 1MB exp. to 2MB
- PCI Local Bus Enhanced IDE controller
- 15" Digital Color Monitor with Flat Screen and .28mm dot pitch
- 11-Bay Mid-Tower case
- 101-Key enhanced keyboard & Mouse
- 14,400 Baud Fax/Modem w/software
- Double-spin CD-ROM drive, multisession Kodak Photo-CD ready
- 16-Bit Stereo Sound Card w/speakers
- MS-DOS & WFW 3.11
- 3 CD Discs: Borland Office 2.0*, Microsoft Encarta Encyclopedia, and Kodak Photo CD
- MS-Money & MS-Entertainment Pack
- Prodigy, Compuserve, and America On-Line software preloaded

Q486DX2/66PM-2 $2075
QP5/66PM-2 $2495
QP5/90PM-2 $2695

1-800-787-8686

Demand Paramount

Quantex workstations pack raw power and pure



Quantex gives you maximum performance and power at a value our competition can't touch. These dual PCI-based workstations, now available with the awesome Pentium™ 90 Processor, blaze through all of your most demanding applications. And with the high-performance peripherals you deserve, Quantex workstations are ready for your most advanced graphics-intensive and computation-heavy software. Put it all together, and you get not only the full technological advantage, but the Quantex value advantage too.

Explosive PCI Power

Watch your most complex applications take off on a 132MB/sec throughput blast! The innovative PCI local bus was developed by Intel® for the most advanced processors and applications of today and tomorrow, so you know it's going to be exceedingly fast and completely compatible. With PCI's independent data transfer to all your peripherals, it supplies unsurpassed performance. And with the convenience of PCI's plug-and-play jumperless configuration, building on your system is a breeze. No more IRQ's or DMA's. It all adds up to unmatched performance and upgradability.

Nothing Less Than Dual PCI

When it comes to optimum system performance, two PCI is certainly better than one. That's why Quantex gives you both, a PCI video card and a PCI enhanced IDE controller. With increased throughput over a wider data path, this dual PCI system delivers every detail without delays. Since the PCI enhanced IDE controller is capable of supporting up to a full 8.4GB with 32-bit access, it transfers data to your hard drive at up to twice the speed of non-PCI systems.

QUANTEX
Microsystems, Inc.

Two Tower Center Blvd., East Brunswick, NJ 08816, Tel: (908) 563-4166, Fax: (908) 563-0407

Power
savings.

Blistering 64-Bit Video!

If your high-end applications are graphics-hungry, Quantex offers you the option of an awesome 64-bit video card. The on-board 64-Bit Graphics Engine, with increased system throughput, makes your applications cruise at extreme speeds. And the 64-bit display memory interface makes CAD/CAM vector calculations and high end desktop publishing applications a snap. Quantex also includes 2MB of memory, upgradable to 4MB, for faster display. And with its 16.7 million true-color palette, you'll get sharper, more vivid images. Plus, our systems have the flexibility to support your most advanced operating systems, like Windows NT and OS/2, and the latest high-end applications, like CAD/CAM and desktop publishing.

Don't Forget More Memory!

How much memory should your system have? The more the better for a full range of performance in present and future applications. That's why Quantex offers no less than 8MB in our powerful workstations. We know that today's software simply performs better with more RAM. And for CAD/CAM and desktop publishing applications, Quantex loads it up with 16MB. After all, it's what your applications need, and what you deserve, for now and for the future.

A High-Performance Warranty to Match Quantex delivers with a quality service package you can't resist. Like one-year of free On-Site Service. Our One-Year Free Parts and Labor Warranty. A no-questions asked, 30-day money back guarantee. And we'll even foot the bill for a lifetime of toll-free technical support. High performance systems from a high performance company. That's Quantex.

Caviar

PARADISE FOUND HERE

intel inside pentium PROCESSOR

*Borland Office 2.0 for Windows is preloaded. Full printed manuals available at an extra charge. Quantex accepts prepaid checks, Visa, MasterCard, Discover, and Amex. Purchase orders from government agencies, universities, and Fortune 1000 companies also accepted. On-Site Service may not be available in certain remote areas. All returned items must have a Return Merchandise Authorization (RMA) number and must be in original packaging. The cost for returned freight is not included with any Money-Back Guarantees; shipping charges are non-refundable. Prices and product descriptions subject to change without notice. Quantex Microsystems cannot be responsible for errors in typography or photography. The IntelDX2, Intel486, Pentium, OverDrive, and the Intel Inside Logo are trademarks of Intel Corporation in the USA and other countries. WordPerfect is a registered trademark of WordPerfect corporation within the United States and other countries. Some of the names or trademarks shown herein may be the property of other companies. Screen images simulated.

PCI Workstations

QP5/60W-1 $1995

- Intel Pentium™ Processor
- 8MB RAM
- 256KB Fast Cache
- 420MB 12ms IDE Hard Drive with 128KB "CacheFlow Buffer"
- 3.5" 1.44MB Floppy Drive
- PCI Local Bus Graphics Accelerator, 16.7 million colors, 1MB exp. to 2MB
- PCI Local Bus enhanced IDE cotroller
- 15" Digital Color Monitor with Flat Screen and .28mm dot pitch
- 11-Bay Mid-Tower case
- 101-Key enhanced keyboard & Mouse
- MS-DOS & WFW 3.11

Q486DX2/66W-1	**$1675**
QP5/66W-1	**$2095**
QP5/90W-1	**$2295**

QP5/90W-2 $2795

- Intel Pentium™ Processor
- 16MB RAM
- 256KB Fast Cache
- 540MB 12ms IDE Hard Drive with 128KB "CacheFlow Buffer"
- Double-spin CD-ROM drive, multisession Kodak Photo-CD ready
- 3.5" 1.44MB Floppy Drive
- 64-Bit PCI Bus Graphics Engine, 16.7 million colors, 2MB exp. to 4MB
- PCI Bus Enhanced IDE controller
- 14,400 Baud fax/modem w/software
- 15" Digital Color Monitor with Flat Screen and .28mm dot pitch
- 11-Bay Mid-Tower case
- 101-Key enhanced keyboard & Mouse
- MS-DOS & WFW 3.11
- Prodigy, Compuserve, and America On-Line software preloaded

Q486DX2/66W-2	**$2175**
QP5/60W-2	**$2495**
QP5/66W-2	**$2595**

VISA

1-800-787-8686

Lean, Mean, "Green" Machines From Amdek!

"Lean" on price, **"Mean"** on full features, and **"Green"** on helping to protect you and the environment! The Amdek AM/815E ($379) and the AM/817E ($839) monitors meet the Swedish MPR-II low radiation emission guidelines and the VESA DPMS Energy Star power savings standard. These two monitors will power down when not in use to help save you and the world money on energy. Amdek introduced the industry's first PC video monitor in 1978 and has been successfully providing quality PC monitor solutions for over fourteen years. Amdek "Direct" offers great prices, a 30-day money back guarantee, toll-free technical support, a one year warranty, no surcharge on credit card orders, low pricing on evaluation units, and special programs for resellers and corporate accounts. **Amdek "Direct"**—The best combination of great prices, proven support and immediate availability from a company with over fourteen years of display experience!

Amdek Family of Display Products

	AM/432E	AM/732E	AM/732NI	AM/815E	AM/817E
Screen Size	14"FS VGA Mono	14" SVGA Color	14" SVGA Color	15"FS SVGA Color	17"FS Hi-Res Color
Max Resolution	640x480	1024x768	1024x768NI	1280x1024NI	1600x1200NI
Max Refresh Rate	70 Hz	70 Hz	90 Hz	90 Hz	105 Hz
Dot Pitch	N/A	.28mm	.28mm	.28mm	.26mm
110-240 VAC (Auto-sensing)	Yes	Yes	Yes	Yes	Yes
MPR II Compliant	No	No	Yes (as option)	Yes	Yes
Power Management	No	No	No	Yes	Yes (Avail. 3/94)
PIN Cushion Control	No	No	No	Yes	Yes
Unit 1 Price	$109	$269	$279	$379	$839
*Unit 2-9 Price	$106	$263	$272	$369	$818
*Evaluation Unit Price	$94	$239	$259	$349	$759

To Order Call Toll Free:
800-72-AMDEK
Call For Volume Discounts

AMDEK
VALUE THROUGH THE YEARS

*Amdek "Direct" pricing. We accept Visa, Mastercard, or cashier's check. Trade accounts are available with credit limits and terms. Shipping, handling, and applicable sales tax not included in the price. All prices, offers and specifications are subject to change without notice. Any return being shipped to an Amdek location will require an RMA (Return Merchandise Authorization) number. Original packaging and proof of purchase required to return any merchandise. Amdek is a registered trademark of Wyse Technology Inc. All other trademarks are the property of their respective owners and are used for identification purposes only. ©1993 Wyse Technology Inc.

Circle 193 on reader service card.

ZENITH DATA SYSTEMS

Z-NOTEFLEX NEW!

- ▲ Leading edge performance
- ▲ 4MB RAM exp. to 24MB
- ▲ 32-bit VL local bus video
- ▲ Detachable display
- ▲ 16-bit stereo sound, speaker, microphone
- ▲ Two Type II or one Type III PCMCIA slot
- ▲ MS-DOS, Windows for Workgroups
- ▲ 3-Year Warranty

Call

Z-NOTEFLEX

Z-NOTEFLEX

Processor	Screen	Hard Drive
SX/33	Monochrome	200MB
DX2/50	Dual Scan	200MB
DX2/50	Active Matrix	340MB
DX2/50	Active Matrix	450MB
DX4/75	Active Matrix	520MB

TEXAS INSTRUMENTS

TravelMate 4000M

- ▲ Brilliant color display
- ▲ 16-bit sound card
- ▲ Integrated Pointing device
- ▲ PCMCIA Type III slot

Processor	Screen	Hard Drive	Price
486SX/25	Monochrome	120MB	$1999*
486SX/25	Enhanced Color	120MB	$2349
486SX/25	Active Matrix	120MB	$3179
486DX4/75	Active Matrix	340MB	$4939

Lease for $74/mo.

$1999*

TravelMate 4000M

TravelMate 4000E Color

Processor	Screen	Price
486SX/25	Enhanced Color	$1849
486DX2/40	Enhanced Color	$2429
486DX2/50	Dual Scan	$2749
486DX2/50	Active Matrix	$3349
486DX4/75	8.4" Active Matrix	$4149
486DX4/75	9.5" Active Matrix	$4999

Lease for $68/mo.

AST

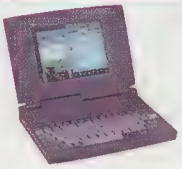
Bravo NB

- ▲ 486SX/33 processor
- ▲ 9.5" display
- ▲ Integrated trackball

Model	Screen	Hard Drive	Price
4/33s203W	Mono	200MB	$1629*
4/33s203W	Dual Scan	200MB	$2249

Lease for $60/mo.

$1629*



Bravo NB

PowerExec

- ▲ 486SL/33 processor
- ▲ 9.5" display
- ▲ Removable hard drive
- ▲ 3-year worldwide warranty

Model	Screen	Hard Drive	Price
4/33SL 203W	Mono	200MB	$2259
4/33SL 203W	Active	200MB	$3899
4/33SL 343W	Active	340MB	$4199

Lease for $83/mo.

AST

Bravo LC Desktops

Model	RAM	Hard Drive	Price*
4/33s 173W	4MB	170MB	$1139
4/33s 273W	8MB	270MB	$1369
4/50s 173W	4MB	170MB	$1359
4/50s 273W	8MB	270MB	$1589
4/66d 273W	8MB	270MB	$1889
4/66d 543W	8MB	540MB	$2269
4/100 273W	8MB	270MB	$2339
4/100t 543W	8MB	540MB	$2719

Lease for $50/mo.

$1139*

Bravo LC

Bravo MT

Model	Hard Drive	Price*
4/33 Model 3	Optional	$1239
4/33 Model 173W	170MB	$1519
4/33 Model 343W	340MB	$1979
4/66d Model 3	Optional	$1659
4/66d Model 173W	170MB	$1929
4/66d Model 343W	340MB	$2399

*Monitors sold separately

Lease for $50/mo.

Hewlett Packard Power

LaserJet 4L

- ▲ 4PPM
- ▲ Crisp, 300dpi print-quality
- ▲ Resolution Enhancement Technology
- ▲ 1-year warranty

LaserJet 4L $659.99

LaserJet 4P

- ▲ 4PPM
- ▲ Sharp, 600dpi print-quality
- ▲ 2MB RAM w/Memory Enhancement Technology
- ▲ 1-year warranty

LaserJet 4P $959.99

LaserJet 4ML

- ▲ 4PPM
- ▲ Enhanced 300dpi resolution
- ▲ Plug-and-play Macintosh and Windows compatible
- ▲ 1-year warranty

LaserJet 4ML $1019.99

LaserJet 4MP

- ▲ 4PPM
- ▲ True 600dpi resolution
- ▲ Auto switching between Macintosh and PC environments
- ▲ 1-year warranty

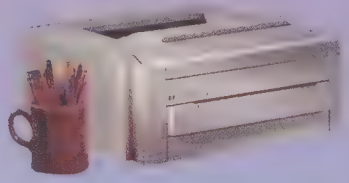
LaserJet 4MP $1379.99

DeskJet 310

DeskJet/DeskWriter 310

- ▲ High quality 3 PPM printing
- ▲ Low cost optional color kit
- ▲ 1-Year warranty

DeskJet 310 $299.99
DeskWriter 310 $299.99



LaserJet 4L

DeskJet 500C

- ▲ Letter-quality 300dpi color printing
- ▲ 100 Sheet feeder for versatile paper handling
- ▲ 3-year warranty

DeskJet 500C $389.99

DeskJet/DeskWriter 520

- ▲ Sharp, 600 dpi "laser-like" print quality
- ▲ Resolution Enhancement Technology for smooth, crisp text and graphics
- ▲ 3-Year warranty

DeskJet 520 $289.99
DeskWriter 520 $289.99

DeskJet/DeskWriter 560C

- ▲ Color 600 dpi "laser-like" print quality
- ▲ Resolution Enhancement Technology for smooth, crisp text and graphics
- ▲ 3-Year warranty

DeskJet 560C $579.99
DeskWriter 560C $579.99

HEWLETT PACKARD
Authorized Dealer

Circle 148 on reader service card.

Before You Buy

TI IBM AST NEC COMPAQ TOSHIBA

Shop and Compare

Don't Settle for Less

	PCs Compleat	Supplier 2	Supplier 3
Guaranteed Lowest Price	YES		
The Best Brand Names	YES		
30-day Money Back Guarantee	YES		
Never a Restocking Fee	YES		
30-day Price Protection	YES		
PC Computing Five Star Award	YES		
Lifetime *Toll-Free* Technical Support	YES		
FREE Hardware Configuration	YES		
FREE Software Installation	YES		
Same Day Shipment	YES		
Pre-Installed Software Discount	YES		
All Major Credit Cards Accepted	YES		
Never a Hidden Surcharge	YES		
$4.95 Shipping on Most Peripherals	YES		
Compaq Authorized for Direct Marketing	YES		
90 Days Same As Cash	YES		
Low Cost Business Leases	YES		
Volume Purchase Agreements	YES		
FREE Asset Tagging	YES		
Customer Satisfaction is Top Priority	YES		

DIRECT TOP FORTY PC Computing FIVE STAR AWARD

PCs Compleat is the proud recipient of PC/Computing magazine's highest Five Star rating for service and overall performance in its listing of the nation's leading direct sellers.

PCs COMPLEAT
THE BEST: BRANDS · PRICE · DELIVERY · SERVICE

Open 24 Hours
Weekends 8 A.M. to 5 P.M.
Open July 4th

CALL TODAY!
800-598-4727
International (508) 624-6400

NEC: Versatility

UltraLite Versa E

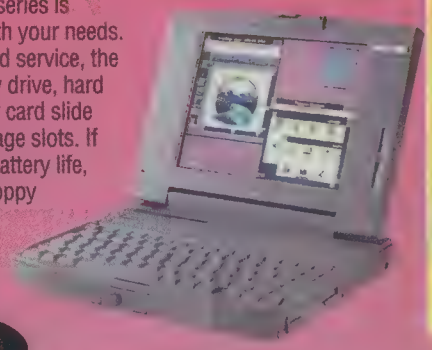
- ▲ 486 processor
- ▲ 4MB RAM, expandable to 20MB
- ▲ 2 Type II PCMCIA slots
- ▲ MS-DOS 6.2, Windows 3.1, built-in trackball

Processor	Screen	Hard drive	Price
DX2/40	Active color	120MB	$3819
DX2/40	Active color	250MB	$4229
DX2/50	Monochrome	209MB	$3259*
DX2/50	Active color	209MB	$4499
DX2/50	Active color	340MB	$4919
DX4/75	Active color	340MB	$5229

Lease for $120/mo.

UltraLite Versa E

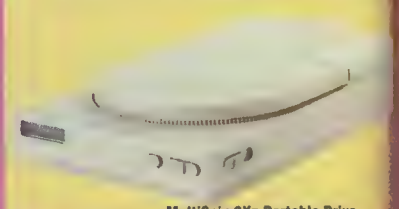
The Versa E notebook series is upgradable to grow with your needs. For ease of upgrade and service, the UltraLite Versa's floppy drive, hard disk drive and memory card slide in and out of their storage slots. If you require extended battery life, slide out the Versa's floppy drive, pop in a second battery, and double your time on the road.



Versa E $3259*

NEC MultiSpin 3X CD-ROM Drives

MultiSpin 3Xp Portable Drive	$389.99
MultiSpin 3Xi Internal Drive	$429.99
MultiSpin 3Xe External Drive	$469.99
MultiSpin 3X Pro External Drive	$929.99

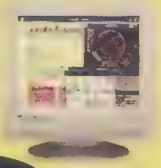


MultiSpin 3Xp Portable Drive

MultiSync Monitors

3V

- ▲ 15" SVGA
- ▲ 1024x768, .28mm NI
- ▲ 72MHz VESA refresh
- ▲ MPR II, EnergyStar



$469.99

5FGp-17" SVGA-**$1109.99**
6FGp-21" SVGA-**$2019.99**

PowerMate Desktops

Meeting your needs for aggressive pricing and outstanding quality, the PowerMate 486 series features local bus video and a graphics accelertor to deliver falcon-like speed. By combining 486 processing power with local bus video and True Color support, the PowerMate takes you to new heights in performance.

PowerMate $1129*

PowerMate Desktops

- ▲ 4MB RAM expandable to 36MB
- ▲ 8KB cache expandable to 256KB
- ▲ Local bus True Color video
- ▲ Graphics accelerator
- ▲ 3 expansion slots, 3 drive bays
- ▲ MS DOS, Windows 3.1, NEC mouse

Processor	Hard drive	Price
486SX/33	170MB	$1129*
486DX2/50	210MB	$1399
486DX2/66	210MB	$1749

*NEC SVGA monitor $319.99

Lease for $55/mo.

Compaq Compleat

Call About New LTE Elite

ProLinea Desktops

- ▲ 4MB RAM expandable to 100MB
- ▲ 3.5" floppy drive
- ▲ Local bus graphics
- ▲ MS DOS 6.0, Windows 3.1

Processor	RAM	Hard Drive	Price
486SX/33	4MB	200MB	$1099*
486DX2/50	4MB	340MB	$1599
486DX2/66	4MB	340MB	$1829
486DX2/66	4MB	525MB	$1969
486DX4/100	8MB	340MB	$2299
486DX4/100	8MB	525MB	$2469

*Compaq color monitors start at $299.99

All Compaq Computers Come with a 3-year Warranty

Prolinea $1099*

ProLinea Net1

- ▲ 486SX/25 or 486SX/33 processor
- ▲ 100MB or 200MB hard drive
- ▲ Integrated 14" .28mm color monitor
- ▲ Integrated ethernet or token ring interface
- ▲ MS-DOS 6.0, Windows 3.1, TabWorks

Call For Pricing

LTE Lite Models Available

Call for Pricing

Contura 4/25

- ▲ 486SL/25 processor
- ▲ 4MB RAM expandable to 20MB
- ▲ 209MB hard drive
- ▲ 9.5" display, available with monochrome or dual scan color display
- ▲ MS-DOS 6.0, Windows 3.1, trackball

Screen	Price
Monochrome	$1989
Dual scan Color	$2319

Lease for $73/mo.

Concerto

- ▲ 4MB RAM expandable to 20MB
- ▲ 9.5" mono display
- ▲ 2 TYPE II or 1 Type III PCMCIA slots
- ▲ Untethered intelligent pen
- ▲ MS-DOS 6.0, Windows 3.1, InkWare NoteTaker
- ▲ PenPower for Excel

Processor	RAM	Hard Drive	Price
486SL/25	4MB	120MB	$1229
486SL/25	4MB	250MB	$1319
486SL/33	4MB	250MB	$1399

Lease for $50/mo.

Contura Aero

- ▲ Type II PCMCIA slot
- ▲ Integrated trackball
- ▲ Weighs only 3.5 lbs.(mono), 4.31 lbs. (color)
- ▲ MS-DOS, Windows 3.1

Processor	Display	Hard Drive	Price
486SX25	Mono	87MB	$1329
486SX25	Mono	170MB	$1599
486SX33	Passive Color	170MB	$2079
486SX33	Passive Color	250MB	$2359

Lease for $50/mo.

PCs COMPLEAT

THE BEST · BRANDS · PRICE · DELIVERY · SERVICE

Open 24 Hours

CALL TODAY!

800-598-4727

International (508) 624-6400

COMPAQ

© PCs Compleat All prices subject to change and do not include shipping Monitors sold separately Lease prices reflect 36 month operating lease to approved business customers. All products or brand names are trademarks of their respective companies. PCs Compleat, 34 St Martin Drive, Marlborough, MA 01752 Phone (508) 480-8500 Not responsible for typographical errors

IBM® • IBM® • IBM®

ValuePoint® SpaceSavers

- ▲ 4MB RAM exp. to 64MB
- ▲ VESA Local Bus graphics
- ▲ 512KB Video RAM exp. to 1MB
- ▲ 2 Serial, parallel, mouse, and keyboard ports
- ▲ IBM DOS 6.1/MS Windows 3.1, mouse

Processor	Hard Drive	Price*
SX 25	120MB	$889
SX 25	120MB	$929
DX/33	212MB	$1399
DX2/66	212MB	$1789

Authorized Personal Computer Dealer

ValuePoint® SpaceSaver

ValuePoint® Desktops

- ▲ 4MB RAM exp. to 64MB
- ▲ Pentium upgradable
- ▲ VESA Local Bus graphics (w/open VESA slot)
- ▲ 1MB Video RAM exp. to 2MB
- ▲ 5 expansion slots, 5 drive bays
- ▲ IBM DOS 6.1, MS Windows 3.1, mouse

Processor	Hard Drive	Price*
486SX/33	170MB	$1219
486DX/33	212MB	$1559
486DX/33	340MB	$1719
486DX2/66	340MB	$2159

Minitower & Multimedia models also available

ValuePoint® P60/D Pentium

- ▲ 16MB RAM exp. to 128MB
- ▲ 256KB cache standard
- ▲ 4 expansion slots (2 PCI, 1PCI/AT, 1 AT)
- ▲ 5 drive bays

Processor	Hard Drive	Price*
Pentium 60MHz	424MB	$4029
Pentium 60MHz	525MB	$4099

*monitor priced separately

IBM Monitors

Description	Price
14", analog controls, .28mm	$349.99
14", digital controls, .28mm	$419.99
15", digital controls, .28mm	$579.99

ThinkPad® 350 notebooks

- ▲ 486SL25 processor
- ▲ 4MB RAM exp. to 20MB
- ▲ Local Bus Graphics
- ▲ 9.2" VGA color or 9.5" VGA mono screen
- ▲ PCMCIA Type II slot
- ▲ TrackPoint II integrated pointing device
- ▲ IBM DOS, Prodigy

Screen	Hard Drive	Price
Monochrome	125MB	$1639
Monochrome	250MB	$2029
Passive Color	125MB	$1939
Passive Color	250MB	$2319

ThinkPad® 500 subnotebooks

- ▲ IBM 486SLC2/50 processor
- ▲ 4MB RAM exp. to 12MB
- ▲ 170MB hard drive
- ▲ 7.4" VGA monochrome display
- ▲ Type II PCMCIA slot
- ▲ TrackPoint II integrated pointing device
- ▲ 3.5" external floppy drive
- ▲ Weighs only 3.8 lbs.
- ▲ IBM DOS 6.1, Prodigy

$1939

Toshiba Direct

Get an Instant Rebate on Angia Modems

T4700/T4800

- ▲ 8MB RAM, expandable to 24MB
- ▲ Brilliant 9.5" display with local bus video
- ▲ 2 PCMCIA slots (Type II, Type III)
- ▲ Microsoft Sound System, built-in micro phone, audio out port
- ▲ MS-DOS, UltraFont, Indeo video compression software, Windows 3.1 (T4700) Windows for Workgroups 3.11 (T4800)

Model	Processor	Screen	Hard Drive	Price
T4700	486DX2/50	Dual scan color	200MB	$3129*
T4700	486DX2/50	Dual scan color	320MB	$3379
T4700	486DX2/50	Active color	200MB	$4549
T4700	486DX2/50	Active color	320MB	$4949
T4800	486DX4/75	Active color	500MB	$5599

Lease for $114/mo

T4700

$3129*

T3400

$1939*

Portege T3400

- ▲ Ultra-portability at only 4.1lbs
- ▲ 486SX/33 processor
- ▲ 120MB hard drive
- ▲ 4MB RAM, expandable to 20MB
- ▲ PCMCIA Type II slot
- ▲ External 3.5" disk drive
- ▲ Integrated AccuPoint pointing device

Screen	Price
Monochrome	$1939*
Active Color	$3419

Lease for $71/mo.

T1910/1950

- ▲ 4MB RAM, expandable to 20MB
- ▲ 9.5" display
- ▲ Type III PCMCIA slot
- ▲ 82-key keyboard
- ▲ MS-DOS, Windows 3.1
- ▲ Ballpoint mouse with Quickport
- ▲ Enhanced power management

Model	Processor	Screen	Hard Drive	Price
T1910	486SX/33	Monochrome	200MB	$1499*
T1910	486SX/33	Dual scan color	200MB	$2039
T1950	486DX2/40	Monochrome	200MB	$1799
T1950	486DX2/40	Dual scan color	200MB	$2289
T1950	486DX2/40	Active color	200MB	$2929
T1950	486DX2/40	Active color	320MB	$3199

Lease for $53/mo.

TOSHIBA

PCC-7/94

PCs COMPLEAT

THE BEST: BRANDS · PRICE · DELIVERY · SERVICE

Open 24 Hours Weekdays
Weekends & Holidays 8 A.M. to 8 P.M. E.T.
Open July 4th

CALL TODAY!

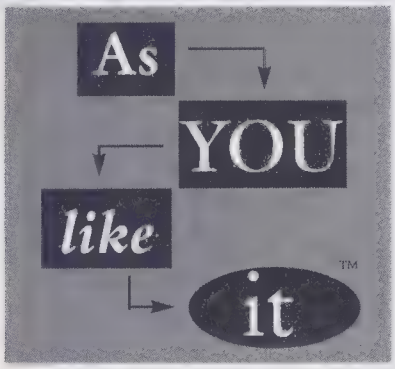
800-598-4727

International (508) 624-6400

Circle 149 on reader service card.

VTech Makes Buying Direct Easy...

VTECH INTRODUCES THE



COMPLETE CUSTOMIZATION PROGRAM

Now create the computer you've always wanted by picking the components yourself. It's easy, just choose a VTech base sustem and then, with the help of our product consultants, add only the options you need.

- Our engineers will custom build your system using the components you've requested.
- Your personalized system will be delivered directly to you.
- All parts and labor will be covered by the VTech warranty.
- Choose from these options: tape back-ups, RAM, modems, floppy drives, hard drives, multimedia kit options, monitors, and warranties

Multi-Media Systems You Can See and Hear.

In 1993 Computer Shopper singled out VTech as one of the fastest growing companies in the PC industry. The reason is simple, we are the manufacturer - not an assembler of someone else's components - which means we can truly deliver-"Technology at Prices You Can Afford."

- VTech designs and manufactures our own components so we control the quality, features and performance.
- With over 11,000 employees and 3 research and engineering labs VTech has the technology and resources to build incredible systems.
- Our prices are among the lowest in the industry because we supply systems to some of the largest manufacturers in the world and that helps us keep production high and prices low.
- 3 year warranty* - PC Computing gave VTech a 5 Star Service Value Rating beating out Dell, Gateway, ZEOS, IBM and Compaq.

VTECH® expotech™

BEST BUY $

expotech series

Expo 486SX33M

- **Intel Verified:** for the Pentium™ OverDrive™ Processor
- 4MB RAM
- 210MB 14ms IDE Hard Drive
- Double Speed CD-ROM
- 16-Bit Stereo Sound Board
- VLB Graphics with 1MB
- 3.5" Diskette Drive
- 14" VTech HiRez Monitor
- MS-DOS 6.2 & Windows 3.1
- Enhanced 101 - Keyboard & Mouse
- 3 Year Warranty*

$1299

Expo 486DX33VM

- **Intel Verified:** for the Pentium™ OverDrive™ Processor
- 4MB RAM with 128KB Cache
- 424MB 13ms IDE Hard Drive
- Double Speed CD-ROM
- 16-Bit Stereo Sound Board
- VLB Graphics with 1MB
- 3.5" Diskette Drive
- 15" VTech HiRez Monitor
- Dual Cooling Fans
- MS-DOS 6.2 & Windows 3.1
- Enhanced 101 - Keyboard & Mouse
- 3 Year Warranty*

$1699

Expo 486DX2/50VM

- **Intel Verified:** for the Pentium™ OverDrive™ Processor
- 8MB RAM with 128KB Cache
- 424MB 13ms IDE Hard Drive
- Double Speed CD-ROM
- 16-B Stereo Sound Board VLB Graphics with 1MB
- 3.5" Diskette Drive
- 15" VTech HiRez Monitor
- Dual Cooling Fans
- MS-DOS 6.2 & Windows 3.1
- Enhanced 101 - Keyboard & Mouse
- 3 Year Warranty*

$1849

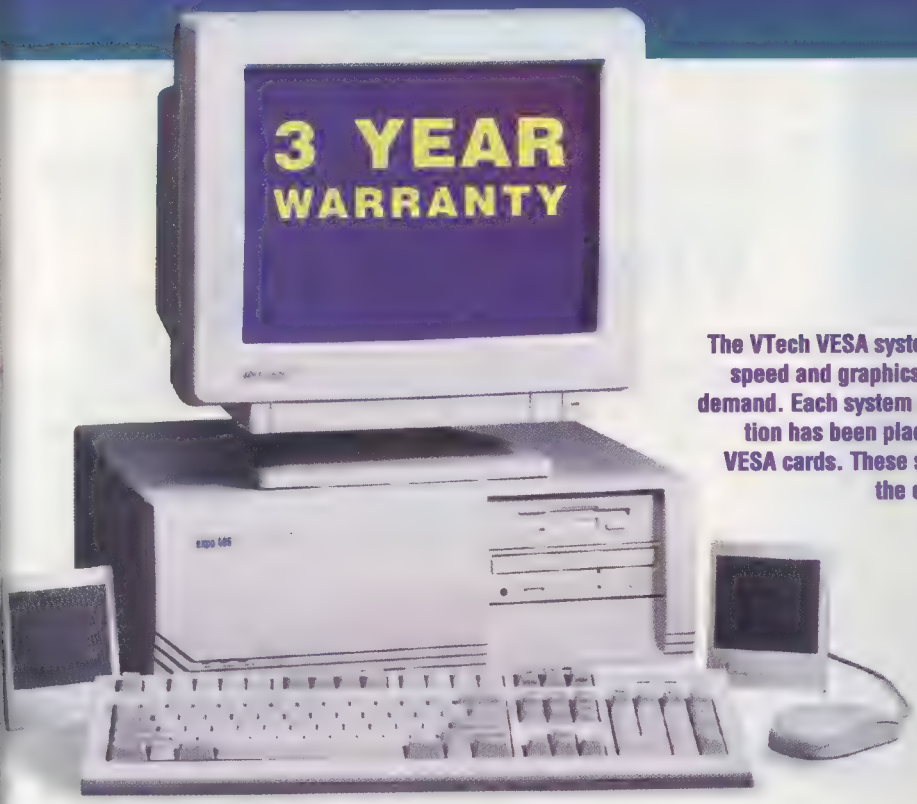
Expo 486DX2/66VM

- **Intel Verified:** for the Pentium™ OverDrive™ Processor
- 8MB RAM with 128KB Cache
- 527MB 12ms IDE Hard Drive
- Double Speed CD-ROM
- 16-Bit Stereo Sound Board
- VLB Graphics with 1MB
- 3.5" Diskette Drive
- 15" VTech HiRez Monitor
- Dual Cooling Fans
- MS-DOS 6.2 & Windows 3.1
- Enhanced 101 - Keyboard & Mouse
- 3 Year Warranty*

$1999

MICROSOFT® WINDOWS™ COMPATIBLE

Hot New VESA Systems...



The Expo 486 VESA Multi-Media system

Prices You Can't Beat

The VTech VESA systems have been specially optimized to deliver the speed and graphics performance that today's Windows applications demand. Each system is equipped with two VESA slots and extra attention has been placed on system compatibility with a wide range of VESA cards. These systems deliver great Windows performance and the extra features you want, at prices you can afford.

The ExpoTech family of VESA systems is available with a wide range of processors, hard drives and memory combinations. All VTech systems are covered by a 3 year warranty and include the extra features and support VTech is known for.

- 2 VLB Slots
- Novell Certified
- Advanced case design with dual cooling fans
- 30 day money back guarantee

The VTech VESA systems are loaded with extra features. Dual Cooling Fans keep the processor, system board, and option cards cool. This means if you upgrade to the Pentium™ OverDrive™ Processor it will be safe and reliable. In fact, these systems have been Intel Verified: for the Pentium™ OverDrive™ Processor.

VTECH® expotech™

BEST BUY $

expotech series

Expo 486SX33V

- **Intel Verified:** for the Pentium™ OverDrive™ Processor
- 4MB RAM
- 210MB 14ms IDE Hard Drive
- VLB Graphics with 1MB
- 3.5" Diskette Drive
- 15" VTech HiRez Monitor
- Dual Cooling Fans
- MS-DOS 6.2 & Windows 3.1
- Enhanced 101 - Keyboard & Mouse
- 3 Year Warranty*

$1199

Expo 486DX33V

- **Intel Verified:** for the Pentium™ OverDrive™ Processor
- 4MB RAM with 128KB Cache
- 424MB 13ms IDE Hard Drive
- VLB Graphics with 1MB
- 3.5" Diskette Drive
- 15" VTech HiRez Monitor
- Dual Cooling Fans
- MS-DOS 6.2 & Windows 3.1
- Enhanced 101 - Keyboard & Mouse
- 3 Year Warranty*

$1449

Expo 486DX2/50V

- **Intel Verified:** for the Pentium™ OverDrive™ Processor
- 8MB RAM with 128KB Cache
- 424MB 13ms IDE Hard Drive
- VLB Graphics with 1MB
- 3.5" Diskette Drive
- 15" VTech HiRez Monitor
- Dual Cooling Fans
- MS-DOS 6.2 & Windows 3.1
- Enhanced 101 - Keyboard & Mouse
- 3 Year Warranty*

$1599

Expo 486DX2/66V

- **Intel Verified:** for the Pentium™ OverDrive™ Processor
- 8MB RAM with 128KB Cache
- 527MB 12ms IDE Hard Drive
- VLB Graphics with 1MB
- 3.5" Diskette Drive.
- 15" VTech HiRez Monitor
- Dual Cooling Fans
- MS-DOS 6.2 & Windows 3.1
- Enhanced 101 - Keyboard & Mouse
- 3 Year Warranty*

$1799

intel inside

1-800-819-0070

Circle 195 on reader service card.

Double Your Power...

"The Awesome VTech Platinum..."

Computer Shopper, February 1994

VTech is the first and only company to bring Symmetrical Multiprocessing to the desktop at prices that blow away even single processor systems. Just look what the experts are saying.

- "The overall performance of the VTech gave it the highest rating of any of the 486 systems, and the jaw dropping price is outstanding."
  Computer Shopper, February 1994
- "VTech leads in PC Multiprocessing."
  PC Magazine, October 12, 1993
- "This system costs less than many single Pentium™ platforms and its performance, at least under NT, would be 20 to 30 percent faster for any multithreaded application."
  Computer Shopper, 1994

Only VTech can deliver your choice of advanced SMP and Pentium systems. Pentium systems are the next frontier of PC performance. If you have a need for speed the VTech Pentium systems will deliver. Utilizing the PCI bus the VTech systems deliver high power at breakthrough pricing.

VTECH® expotech™

BEST BUY

Platinum Series

Platinum 486DX2/50

- **Intel 486DX2/50 Processor**
- **Intel Verified:** for the Pentium™ OverDrive™ Processor
- 8MB RAM
- 424MB 13ms IDE Hard Drive
- 256KB Copy Back Cache
- SCSI II w/ built-in BIOS support
- 16550 Serial Port Controllers
- Multiprocessor Upgrade Slot
- S3 VLB Accelerator with 1MB
- 3.5" Diskette Drive
- 14" VTech HiRez Monitor
- MS-DOS 6.2 & Windows 3.1
- Enhanced 101 - Keyboard & Mouse
- 3 Year Warranty*

$1749

Platinum 486DX2/66

- **Intel 486DX2/66 Processor**
- **Intel Verified:** for the Pentium™ OverDrive™ Processor
- 8MB RAM
- 424MB 13ms IDE Hard Drive
- 256KB Copy Back Cache
- SCSI II w/ built-in BIOS support
- 16550 Serial Port Controllers
- Multiprocessor Upgrade Slot
- S3 VLB Accelerator with 1MB
- 3.5" Diskette Drive
- 15" VTech HiRez Monitor
- MS-DOS 6.2 & Windows 3.1
- Enhanced 101 - Keyboard & Mouse
- 3 Year Warranty*

$1949

Platinum 486DX2/66^2

- **Dual Intel 486DX2/66 Processors**
- **Intel Verified:** for the Pentium™ OverDrive™ Processor
- 8MB RAM
- 424MB 12ms IDE Hard Drive
- Double Speed SCSI CD-ROM
- 256KB Copy Back Cache
- SCSI II w/ built-in BIOS support
- 16550 Serial Port Controllers
- S3 VLB Accelerator with 1MB
- 3.5" Diskette Drive
- 15" VTech HiRez Monitor
- Windows NT
- MS-DOS 6.2 & Windows 3.1
- Enhanced 101 - Keyboard & Mouse
- 3 Year Warranty*

$2899

Platinum P5-60

- **Intel 60MHz Pentium™ CPU**
- 8MB RAM with 256k Cache
- 424MB 13ms IDE Hard Drive
- SCSI II w/ built-in BIOS support
- PCI Local Bus Graphics with 1MB
- 3.5" Diskette Drive
- Enhanced Parallel Port
- High Speed Serial Port Controllers
- 14" VTech HiRez Monitor
- MS-DOS 6.2 & Windows 3.1
- Quality Keyboard, Mouse
- 3 Year Warranty*

$2199

VTech Value Systems...

and Power Portables

The ExpoTech series of integrated systems from VTech have been our most popular systems. Their great combination of performance, features, and low price have made them the clear choice for anyone looking for great value.

Integrated means we've combined as many features and performance enhancements as possible into the main system board. This integration creates a well designed board with exceptional reliability and performance.

BEST BUY $

expotech series

Expo 486SX33

- Pentium™ Technology Ready
- 4MB RAM
- 210MB 14ms IDE Hard Drive
- Local Bus Graphics with 1MB
- 3.5" Diskette Drive
- 14" VTech HiRez Monitor
- Full Size Metal Desktop Case
- MS-DOS 6.2 & Windows 3.1
- Enhanced 101 -Keyboard & Mouse
- 3 Year Warranty*

$1099
$1029 with 486SX25

Expo 486DX33

- Pentium™ Technology Ready
- 4MB RAM with 128KB Cache
- 424MB 13ms IDE Hard Drive
- Local Bus Graphics with 1MB
- 3.5" Diskette Drive
- 14" VTech HiRez Monitor
- Full Size Metal Desktop Case
- MS-DOS 6.2 & Windows 3.1
- Enhanced 101 -Keyboard & Mouse
- 3 Year Warranty*

$1399

Expo 486DX2/50

- Pentium™ Technology Ready
- 4MB RAM with 128KB Cache
- 424MB 13ms IDE Hard Drive
- Local Bus Graphics with 1MB
- 3.5" Diskette Drive
- 14" VTech HiRez Monitor
- Full Size Metal Desktop Case
- MS-DOS 6.2 & Windows 3.1
- Enhanced 101 -Keyboard & Mouse
- 3 Year Warranty*

$1425

Expo 486DX2/66

- Pentium™ Technology Ready
- 8MB RAM with 128KB Cache
- 424MB 13ms IDE Hard Drive
- Local Bus Graphics with 1MB
- 3.5" Diskette Drive
- 14" VTech HiRez Monitor
- Full Size Metal Desktop Case
- MS-DOS 6.2 & Windows 3.1
- Enhanced 101 -Keyboard & Mouse
- 3 Year Warranty*

$1649

VTECH® expotech™

The ExpoTech Notebooks offer a great combination of features and price. The removable hard drive provides versatility usually found only on systems costing hundreds more.

- Portable - Weighs less than 7lbs.
- Powerful - 4MB RAM and 120MB HD
- 9600/2400 Data/Fax modem
- 1 Year Warranty on Notebooks

ExpoNote 486SLC/33

- Weighs less than 7 lbs.
- 4MB RAM
- 120MB Hard Drive
- Removable Hard Drive
- 640x480 VGA with 64 grey levels
- Simultaneous External VGA port
- 3.5" Diskette Drive
- 9600/2400 Data/Fax Modem
- MS-DOS 6.0 & Windows 3.1
- Only 2.1"(H) x 11.4"(W) x 9.25"(D)
- Power management functions
- Full Size Mouse

$1099

7 days a week:
Central Standard Time
Mon.-Fri. 7:00am-8:30pm,
Saturday 9:00am-6:00pm
Sunday 10:00am-3:00pm,
Fax 1-800-947-3976,
Government & Education
1-800-947-6461

Software & service package for desktop & tower systems only. The Intel Inside Logo, Intel, Pentium and OverDrive are trademarks of Intel Corporation. All other brands and product names are trademarks or registered trademarks of their respective companies. All prices and configurations are subject to change without notice or obligation. Prices do not include shipping.

VTech Computers, Inc.,
800 Church Street,
Lake Zurich, Illinois 60047

1-800-819-0070

Circle 196 on reader service card.

MIDWEST COMPUTER WORKS

YOUR COMPLETE COMPUTER SOURCE!!!

NOTEBOOK SPECIALISTS! YOUR LAPTOP SUPER SOURCE!

✔ Widest Selection ✔ Top Name Brands ✔ Quality Products ✔ Knowledgeable Sales Staff

TEXAS INSTRUMENTS

Only $4899*
- IntelDX4™/75 processor
- Large 9.4" Active Matrix Color display
- 4MB RAM, expandable to 20MB, 455MB HD
- Microsoft BallPoint® with QuickPort™ connection

TravelMate™ 4000E WinDX4™ /75

Only $4149*
- IntelDX4™/75 processor
- 640x480 VGA Active Matrix Color display
- 4MB RAM exp. to 20MB, 340MB hard disk drive
- Microsoft BallPoint® with QuickPort™ connection

TravelMate™ 4000E WinDX4™ /75

HARDWARE

BATTERY BACKUPS

American Power BK250B ... 97/157
American Power BK450 / BK600 ... 189/258
American Power BK900 ... 368
American Power BK1250 ... 489
American Power AP400 ... 279
American Power AP600 SmartUPS ... 339
American Power AP900 SmartUPS ... 539
American Power AP900Ex SmartUPS ... 1029
American Power AP1250 SmartUPS ... 675
American Power AP2000 SmartUPS ... 1129
Tripp Lite BC250 / BC400 ... 98/149
Tripp Lite BC500 / 500 LAN ... 173/179
Tripp Lite BC600 LAN / 750 LAN ... 245/299
Tripp Lite BC900 LAN / 1250 LAN ... 339/448
Tripp Lite Omni 500 LAN, 600 LAN ... 249/293
Tripp Lite Omni 750 LAN / 1250 LAN ... 379/579
Tripp Lite UC1200 / UC1800 ... 139/187

COMPUTERS

AST Bravo LP 486DX2-66 170MB ... 1689
AST Bravo LP 486 DX2-66 340MB 8MB 2179
AST Premmia LX Pentium 60 270MB 8MB2899
Compaq Prolinea 486SX/50 200MB ... 1259
Compaq Prolinea 486DX2/50 200MB ... 1449
Compaq Prolinea 4/66D 340MB ... 1849
Compaq Prolinea 486DX4/100 340MB ... 2349
Compaq DeskproXE 560 P60 525MB ... 3099
Compaq Prolinea NET1 Series BEST PRICES
Compaq Prolinea MT Mini-Towers All Models CALL
Compaq PROLIANT All Models BEST PRICES
Compaq Prosignia VS Series BEST PRICES
Wyse Terminals 30+/50/60/325FS ... 279/355/279/539

CONTROLLERS

Adaptec AHA 1522A SCSI-2 ISA Kit w/Flop 139
Adaptec AHA 1542 SCSI-2 ISA w/Flop 199
Adaptec AHA-1742A SCSI-2 EISA w/Flop 349
Adaptec AHA-2742 SCSI-2 EISA w/Flop 299
Adaptec AHA 2842 SCSI-2 VESA w/Flop 299
Adaptec AHA-2940 PCI SCSI Master CALL
Boca IDE 2 HDD, 2 FDD de002 ... 35
Boca IDE 2 HDD 2 FDD 2 ser 1-par ... 49

MATH CO-PROCESSORS

Cyrix 386 to 486 CPU Upgrade CALL
Cyrix Math Co-processors All Models ... 68
Intel 486SX & 486DX 25 to 50 Overdrive 309
Intel 486SX & 486DX 33 to 66 Overdrive 479
Intel Math Co-processors All Models CALL

Easy Payment Options!
- Purchase orders accepted from educational institutions, federal & state agencies and approved corporations
- All major credit cards accepted.
- C.O.D's welcome.

Policy Information

* Your credit card is not charged until the merchandise is shipped • Personal and company checks will delay orders 2 weeks • No extra charge for credit cards • All prices subject to change • For orders outside the USA we require payment by wire transfer or American Express credit card • We check for stolen credit cards • All returns for credit, repair or exchange must have a return authorization number issued by our customer service department • All returned merchandise must be shipped to our main warehouse located at: 180 Lexington Drive Buffalo Grove, IL 60089

MULTIMEDIA

MULTIMEDIA

Creative Labs Digital Edge int ... 649
Creative Labs Digital Edge 3X CD-int ... 699
Creative Labs Discovery 16 int ... 319
Creative Labs Omni CD int ... 205
Creative Labs Gamebaster CD int bundle ... 389
Creative Labs Edutainment16 int ... 429
MediaVision MV-3000 Family Super Deluxe 399
MediaVision MV-4000 Reno Premier ext. ... 519
MediaVision Fusion Double CD16 int. ... 296
MediaVision Pro 16 Multimedia III ... 679
MediaVision Memphis ext CD-ROM Kit ... 499
Sony CDU33 A/N Starter Kit int. ... 229
Sony CDU33 A/L Mltimdia Kit int. ... 469
Sony CDU7305-3A Mltimdia Kit ext. ... 469
Turtle Beach Multisound upgrd ... 198
Turtle Beach Monterey Mult Media upgrd ... 699

VIDEO CAPTURE

Creative Labs Video Blaster SE ... 229
Creative Labs Video Spigot ... 249
Creative Labs Video Blaster FS 2000 ... CALL
MediaVision ProMovie Studio ... 179
TrueVision Video VGA16 ... 779
TrueVision Targa+ 16 / 64 ... 1099/1599

CD-ROM DRIVES

Chinon CDS535 220ms SCSI-2 int ... 329
Chinon CDS535 220ms w/contrl ... 354
MediaVision Reno 180ms ext. ... 279
NEC 3XP CDR-400 portable ... 399
NEC 3XI CDR-500 int / 3XE CDR-600 ext. ... 449/479
NEC CDR-900 external 4X ... 929
Sony CDU-33A01 int dbl speed Bare ... 149
Sony CDU-33A01 Kit ... 199
Sony CDU-561 295ms SCSI int ... 279
Sony CDU7811 295ms SCSI ext ... 399
Toshiba TXM-4101 int / ext. ... 224/285
Toshiba XM-3401b int. SCSI ... 339

OPTICAL DRIVES

Pinnacle Tahoe 128MB ext ... 899
Pinnacle Sierra 2 6GB PC ext ... CALL
Pinnace MFO-650 650MB ext Worm Kit ... 3119
Pinnace PMO-650MB ext Rewrite ... 3119
Pinnace Recordable CD-ROM int/ext ... CALL
PLI Infinity Flopbcal 3.5" 21mb int ... 319
PLI Infinity 3.5" 128mb int ... 999
Sony SMOE301F 128MB int 40ms ... 999
Sony SMF521 1.3GB int 40ms ... 2049

SOUND BOARDS

MediaVision Pro Audio Spectrum 16 Basic 79
MediaVision ProAudio Studio16 ... 129
MediaVision ProAudio Spectrum 16 ... 95
Creative Voice Assist. ... 59
MediaVision Pro Audio PowerPk ... 59
Sound Blaster Pro Value Ed. ... 79
Sound Blaster 16 Value Ed. ... 99
Sound Blaster AWE 32 ... 279
Sound Blaster 16 MCD ... 139
Sound Blaster 16 ASP MCD ... 179
Sound Blaster 16 SCSI 2 ... 169
Sound Blaster 16 SCSI 2 ASP ... 209
Wave Blaster Daughter Brd. ... 179
Turtle Beach Maui WaveTable Stnt II ... 139
Turtle Beach Tahiti ... 249
Turtle Beach Monterey ... 339
Turtle Beach Audio Adv PCMCIA ... 95
Wavjammer 16-bit Stereo PCMCIA ... NEW

HARDWARE

TAPE BACKUP

Colorado Jumbo 250MB ... 165
Colorado Trakker 120MB / 250MB 199/327
Colorado PT-25 2GB SCS w/controller int 949

DIGITIZERS

Calcomp 12x12 / 12x18 all w/16 button 279/558
Kurta 12x12 XLP / 12x18 XLP ... 229/469
Summasketch III 12x12, 12x18 Pro ... 299/529
Wacom ArtZ 6x8 / 6x9 ... 332/445

PLOTTERS

Calcomp Designmate 3024S ... 1749
Hewlett Packard Plotters ... ALL MODELS
Pacific Data Pro Tracer ... 1349

SCANNERS

Avec 2400 Color Flatbed w/OmniScan ... 559
Hewlett Packard Scanjet 2P greyscale ... 479
Hewlett Packard Scanjet 2CX Color ... 969
Logitech Scanman 256 ... 149
Microtek Scanmaker II G w/OmniScan b&w 449
Microtek Scanmaker II XE dir w/Photoshop LE ... 879
Microtek SP color w/ Adobe Photoshop LE 749
Microtek II HR High Resolution color ... NEW
Microtek Scanmaker III 36-bit ... CALL
Relisys 2412 PC Clr Flatbed w/Photoshop 1199
Relisys ... All Models ... PLEASE CALL
Mustek Gray Artist Handheld ... 149
Mustek Color Artist Handheld ... 279

VIDEO BOARDS

ATI Graphics Wonder Mach32 1MB ISA/VLB 159
ATI Graphics Ultra+ 2MB ISA ... 199
ATI Graphics Ultra Pro 2MB VLB/ISA ... 275
ATI Graphics Ultra Pro 2MB PCI/EISA ... 389
ATI Graphics Pro Turbo 2MB ISA/VLB/PCI 424
ATI Graphics Pro Turbo 4MB ISA/VLB/PCI 689
Diamond Speedstar Pro 1MB ISA/VLB ... 109
Diamond Stealth Pro 1MB 2MB SA/VLB 229/299
Diamond Viper Local Bus 1280X1024 int ... 339
Matrox MGA-Ultra 2MB ISA/VESA ... 499
Matrox MGA-IMP3V 3MB VLB ... 689
Matrox PC/2 1280 2MB PCI ... 419
MediaVision Pro 4MB 1280VLB ... 699
Number Nine GXE VLB Level 11 / 12 359/429
Number Nine GXi TC Level 29 ... 1449

DRIVES

Conner CFA340A 340MB 12ms IDE 299
Conner CFS420A 426MB 14ms IDE 305
Conner CFA540A 528MB 12ms IDE 415
Maxtor 7131A 130MB 15ms IDE ... 205
Maxtor 7213A 213MB 15ms IDE ... 216
Maxtor 7546A 540MB 12ms IDE ... 429
Micropolis 2210A 1GB 10ms IDE ... 829
Micropolis 2217 1.7GB 10ms SCSI-2 ... 1089
Micropolis 1926 2.1GB 11ms SCSI-2 1449
Seagate ST3145A 130MB 16ms IDE 189
Seagate ST3243A 214MB 16ms IDE 216
Seagate ST3290A 260MB 16ms IDE 229
Seagate ST3391A 341MB ... 289
Seagate ST3550A 452MB 12ms IDE 379
Seagate ST3655N 12ms SCSI ... 489
Seagate ST3655A 529MB ... 429
Seagate ST3655A 545MB 12ms IDE 479
Seagate ST31200N 1GB 9ms SCSI-2 829
Seagate ST12400N 2.1GB 9ms SCSI-2 1489
Seagate ST34300N 2.9GB 11ms SCSI-2 2119
SyDos Extra 88MB Rmvbl 88 int 88Ext 399/459
SyDos Puma 88MB ext parallel removable 439
Teac FD505 dual floppy drive ... 119
Teac 3.5" and 5.25" disk drives ... 59
Toshiba 3.5" 1.44MB disk drive ... 59

MODEMS

Boca Pocket Modem 14.4 w/Fax 159
Boca 14.4 w/Fax int/ext ... 99/139
Boca VFAST 28.8 int/ext ... 189/219
Hayes Acura 144+ FAX/SCEZ int 155
Hayes Optima 14.4 + FAX14.4 EZ ext 369
Intel PCMCIA 24/96 fax/modem ... 126
Intel Satisfaxt on 400 int/ext ... 279/319
Megahertz modems for all laptops CALL
Megahertz XJ144 xJack 14.4 PCMCIA ... 259
Multitech 1432MU 14.4 fax/modem pocket 369
Multitech 1432BA 14.4 fax/modem ext 409
Practical Periph 14.4 w/fax internal ... 129
Practical Periph 14.4 w/fax mini tower 139
Practical Periph 14.4 w/fax PCMCIA 269
Supra 14.4 S/R Fax int ... 119
Supra Fax Modem 14.4LC ext ... 149
Telebit QBlazer v.32 v.42 v.42bis trnspt All Modes
UDS internal & external ALL MODELS CALL
US Robotics Sportster 14.4 int/ext 121/135
US Robotics Sportster 14.4 w/fax int/ext 119/139
Courier V.32 Turbo 19.2 w/fax int/ext 359/395
Courier V.34 Ready CALL
US Robotics Wordport pocket modems CALL
US Robotics Wordport 14.4 PCMCIA 229
Zoom VFP 19.2 Fast int w/fax ... 139
Zoom VFP24K Fast int w/fax ... 144
Zoom VXV32BIS 14.4 v32/32bis/42bis ext 133

NOTEBOOK COMPUTERS

AST Bravo NB486SX25 170MB Mono 1839
AST Bravo NB486SX25 170MB STN Color2499
AST Bravo NB486SX25 170MB Active Clr 3229
Canon Notejet 486 M33/200MB ... 1899
Canon Notejet 486 C33/200MB Color ... 2499
Canon Notejet 486 C50/130MB Color 2729
Canon Notejet 486 C50/260MB Color ... 2929
Compaq Concerto 486SL/25 120MB Mono1275
Contura AERO 486SX25 170MB Mono 1665
Contura AERO 486SX33 170MB STN Clr 2149
Contura AERO 486SX33 250MB STN Clr 2445
Compaq Contura 4/25 120MB ... 1749
Compaq Contura 4/25 209MB ... 2039
Compaq Contura 4/25C 120MB Color 2099
Compaq Contura 4/25C 209MB Color 2399
Compaq LTE-LITE 120MB 4MB TFT Mono2919
Compaq ELITE 486DX2/40 170MB STN Clr 3219
Compaq ELITE 486DX2/40 170MB TFT Clr3895
Compaq ELITE 486DX2/40 340MB TFT Clr4289
Compaq ELITE 486DX2/50 340MB TFT Clr5159
Compaq ELITE 486DX4/75 340MB 8MB TFT Clr 5869
Compaq ELITE 486DX4/75 510MB 8MB TFT Clr 6359
TI TM4000E WinSX25 Psv Clr 120MB 1869
TI TM4000E WinDX2/40 Color 200MB ... 2429*
TI TM4000E WinDX2/50 Mono 200MB 2427
TI TM4000E WinDX2/50 Psv Clr 200MB 2736
TI TM4000E WinDX2/50 Actv Clr 200MB 3395*
TI TM4000E WinDX4/75 Actv Clr 340MB 4149*
TI TM4000E WinDX4/75 Actv Clr 455MB 4899
TI TM4000M 486SL/25 Mono 120MB ... NEW
TI TM 4000M 486SL/25 Psv Clr 120MB NEW
TI TM4000M 486SL/25 Actv Clr 200MB NEW
TI TM4000M 486DX4/75 Actv Clr 344MB NEW
Toshiba T1950 486DX2/40 Mono 120MB 1723
Toshiba T1950 CS STN Color 200MB 2329
Toshiba T1950 CT TFT Color 200MB ... CALL
Toshiba T4600C 486SL-33Color 200MB 4099
Toshiba T1910 486SX-33 200MB ... 1499
Toshiba T1910CS 486SX-33 200MB Color2069
Toshiba T3400 486SX-33 Mono 120MB 1939
Toshiba T3400CT 486SX-33 Color 120MB3399
Toshiba T4700CS 486DX2-50 200/340MB Clr CALL
Toshiba T6600C 486DX2-66 510MB 8MB Clr 6199
Toshiba T6600C 486DX2-66 CDROM Color 6729

*TI SPECIAL! FREE 14.4 Modem with Send/Receive Fax!

MONITORS

ADI MicroScan 2E 14" 800x600 ni 28mm 280
ADI MicroScan 3E 14" 1024x768 ni 28mm 320/350
ADI MicroScan 3G 14" 1280x1024 ni 26mm 365
ADI MicroScan 4G 15" 1280x1024 ni 28mm 439
ADI MicroScan 5A 17" 1280x1024 ni 26mm 849
Amdek mono VGA 14" ... 99
CTX 14" 1024X768 28mm ... 249
CTX 14" 1024x768 ni 28mm MPRII ... 269
CTX 15" 1024x768 ni 28mm ... 349
CTX 15" 1024x768 ni 28 Low Radiation 369
CTX 17" 1280x1024ni 28 Digital ... 699
Goldstar 1423+ 14" 640x480 51mm ... 189
Goldstar 1460+ 14" 1024x768 28mm ... 249
Idek MF-5315 15" 1024x768 ni 28mm 439
Idek MF-8617 17" 1280x1024 ni 26mm 799
Idek MF-6317 17" 1280x1024 ni 26mm 949
Idek MF-8221 21" 1600x1200 ni 28mm 1925
Idek MF-8421 21" 1600x1200 ni 26mm 1979
Idek MF-9621 21" 1600x1200ni 26mm 2299
Mag LX1564LG 15" 1280x1024ni 28mm 389
Mag DX17F 17" 1280x1024ni 26mm 749
Mag MX17FG 17" 1280x1024 26mm 929
Mitsubishi Diamond Scan 17" 1280x1024 989
Mitsubishi Diamond Scan 20" 1024x768 1549
Nanao F340iW 15" 1024x768 28mm 659
Nanao F550i 17" 1280x1024 28mm 949
Nanao F550iW 17" 1280x1024 28mm 1039
Nanao F560iW 17" 1280x1024 26mm 1299
Nanao T560 17" 1280x1024 25mm 1589
Nanao T660i 20" 1280x1024 30mm 2299
Nanao F760iW 21" 1280x1024 28mm 2029
F780iW 21" 1600x1200 26mm CALL
NEC 3FGE / 3V 15" 1024x768 28mm577/469
NEC 4FGE 15" 1024x768 28mm 619
NEC 5FGE / 5FGP 17" 1280x1024 28mm999/1099
NEC 6FGP 21" 1280x1024 28mm 1999
Sony CPD1730 17" 1024x768 25mm 949
Sony GDM-17SE11 17" 1600x1280 ni 1099
Sony GDM 20305 20" 1280x1024 30mm1859
Sony GDM 2038 1600x1200 20" 30mm 1969
ViewSonic V6E 14" 1024x768ni 28mm 299
ViewSonic V15E 15" 1024x768 28mm 379
ViewSonic V17G 17" 1280x1024ni 28mm 839
ViewSonic V21 1600x1280n 25mm 1799

NETWORKING

3COM 3C509 Ethernlnk III coax ... 115
3COM 3C509 Ethernlnk III coax 5-pack ... 519
3COM Ethernlnk III 10baseT ... 115
3COM 3C509TP Ethernlnk III 10baseT 5-pack 525
3COM 3C509 Combo Ethernlnk III coax & 10bT 135
3COM 3C529 Ethernlnk II PS2 coax ... 237
3COM 3C529TP Ethernlnk III PS2 10baseT ... 237
3COM 3C579 Ethernlnk III EISA coax ... 226
3COM 3C579TP Ethernlnk III EISA 10baseT 226
3COM 3C589TP Ethernlnk III PCMCIA 10BT 232
3COM 3C589C Ethernlnk III PCMCIA Combo . 289
3COM 3C16271 12-Port Link Builder 10BaseT 618
Artisoft Centra-Station 2 ... 389
Artisoft Nodenunner 2000/C Coax / 2000/T 10BT .169
Artisoft Nodenunner/SI 2000/T 10BT ... 85
Artisoft Nodenunner 2000/A Combo ... 219
Artisoft AE-3 Ethernet Combo card ... 222
Artisoft V6.0 Starter Kit ... 349
Artisoft V6.0 5-user to 100-user ... CALL
Artisoft Artcom LAN Modem Software ... 265
Digiboard ... ALL MODELS ... CALL
Intel Ether Express 16-bit coax ... 99
Intel Ether Express 16 10BT / 16 combo .99/116
Intel Ether Express Flash 10BT ... 111
Intel Ether Express EISA 32-bit coax ... 409
Intel Token Express 16/4 SA ... 349
Nat-Semi NE4100T1 Informr PCMCIA 10BT 168
Netware 3.12 5-user ... 549
Netware 3.12 10-user ... 1249
Netware 3.12 25-user ... 1849
Netware 3.12 50-user ... 2465
Netware 3.12 100-user ... 3479
Netware 3.12 250-user ... CALL
Netware SFT III 3.11 ... BEST PRICE CALL
Netware V4.01 5-user / 10-user ... 749/1619
Netware V4.01 25-user / 50-user ... 2419/3249
Netware V4.01 100-user / 250-user 4549/8869
Netware V4.01 500-user / 1000-user ... CALL
Netware Upgrades Available ... BEST PRICE
Novell DOS 7.0 ... 69
Novell Personal Netware ... 69
Novell Personal Netware 5-user ... 259
NE2000+ Ethernet 16-bit coax ... 89
NE3200 Combo 32-bit EISA ... 369
Pacific Data Direct Net 10-Bit ENET ... 359
SMC Arcnet PC130 / PC270E ... 68/108
SMC Arcnet PC600WS w/ksh / PC650FS svr 119/198
SMC Arcnet 8-port Coax Active Hub ... 225
SMC Ethercard+ Elite 16-bit coax ... 119
SMC Ethercard+ Elite 16T 16-bit 10base-T ... 119
SMC Ethercard+ Elite 16-bit PS/2 10baseT 184
SMC Ethercard+ Elite 16-bit Combo ... 134
SMC Ethercard+ Elite 32-bit EISA coax ... 599
SMC Ethercard+ Elite 32-bit EISA 10baseT 589
SMC Elite 16 Ultra Ethernet coax ... 99
SMC Elite 16T Ultra Ethernet 10baseT ... 99
SMC Elite 16C Ultra Ethernet Combo ... 118
SMC Ethernet 8-port 10BaseT Concentrator . 324
SMC Ethernet 12-port 10BaseT Concentrator 579
Thomas Conrad 6242 Arcnet 8-bit ... 66
Thomas Conrad 6245 Arcnet 16-bit ... 176
Thomas Conrad 3045 STP 100 mbps ... 448
Thomas Conrad 3045-CX 100mbps coax ... 437
Thomas Conrad 3045ST 100mbps fiber ... 704
Thomas Conrad 3047 CX 100mbps EISA ... 599
Thomas Conrad 3050 STP 8-port Hub ... 1168
Xircom Pocket Arcnet coax ... 229
Xircom Pocket Arcnet twisted pair ... 229
Xircom Pocket Ethernet coax ... 269
Xircom Pocket Ethernet 10baseT ... 269
Xircom Pocket Token Ring Adapter ... 455
Xircom Pocket Ethernet Print Server coax 299
Xircom Pocket Ethernet Print Server 10baseT 289
Xircom Parallel Port Multiplexor ... 78
Xircom Credit Card Ethernet 16-bit coax or 10bT 259

SOFTWARE

ACT! V2.0 for Windows ... 175
Adobe Illustrator 4.0 ... 439
Adobe Photoshop 2.5 ... 558
Aldus Pagemaker 5.0 ... 549
Borland C++ 4.0 / Turbo C++3.1 329/75
Borland Office for Windows ... 369
Borland Paradox for Win V4.5 ... 139
CA-dBfast / CA-Realizer ... 174/71
Caere Pagekeeper ... 357
Caere Omnipage Pro 5.0 ... 457
Calera WordScan Plus 3.0 ... 379
Central Point PCTools Win ... 87
Corel Draw 4.0 CD-ROM ... 249
Delrina Winfax Pro 4.0 ... 79
Lotus 1-2-3 ver 4.01 ... 299
Lotus Smart Suite ... 439
Microsoft Access V.20 ... 299
Microsoft Excel / Word 294/299
Microsoft FoxPro 2.6 Prof/Win 435
Microsoft Project 4.0/Win. ... 429
Procomm Plus 1.02 ... 95
QuarkXPress v3.3 ... 598
Word Perfect 6.0 ... 283
CA-Clipper V5.2 ... 491

1000s of Titles Available Please Call!

The Canon BJC-600 is the brilliant choice in a personal color printer. Features 360 dpi resolution, 170 cps at 10 cpi, 340 cps at 20 cpi, a 100 sheet feeder and supports letter, legal, and commercial #10 envelopes. All this for ONLY ... $549*

PRINTERS

CANON

BJ10SX ... 209*
BJ200E / BJ230 ... 259*/358*
BJC-600 ... 549*
BJC800 / BJC820 ... 1429*/1569*

CITIZEN

Notebook Printer Color ... 319

COMPAQ

Pagemarq 15 ... 2599
Pagemarq 20 ... 3749

DICONIX

Kodak 180si ... 219
Kodak Color Ease Dye Transfer 6359

EPSON

FX870 / FX1170 ... 267/354
LQ570+ / LQ870 ... 245/444
LQ1070 / LQ1170 ... 365/611
DFX5000 / DFX8000 ... 1327/2269
Stylus800 ... 279

HEWLETT PACKARD

Deskjet 310 Portable ... 298
Deskjet 520 ... 299
Deskjet 560C ... 579
Deskjet 1200C ... 1378
Laserjet 4L ... 674
Laserjet 4P ... 979
Laserjet 4 Plus ... 1429
Laserjet 4 ... 1368
Laserjet 4M ... 1879
Laserjet 4M Plus ... CALL
Laserjet 4Si ... 2978
Laserjet 4SiMX ... 4479

IBM

Execjet II 4076 ... 279
Laser 10 / Laser 10R ... 1119/1339
Lsr 10R Duplex / Lsr 12R 1849/1664
Laser 12L / Laser 16L 1929/2699

OKIDATA

184 Turbo ... 219
320 / 321 ... 299/419
520 / 521 ... 369/488
590+ / 591+ ... 419/569
395 / 395c ... 959/1029
Laser 400E ... 498
Laser 810 ... 899
OL410e ... 649

PANASONIC

KXP3123 / 3124 ... 255/329
KXP2124 / KXP1624 ... 318/385
KXP3624 ... 415
KXP4440 / 5400 Laser 1029/839
KXP5410 Postscript Laser ... 1219

QMS

420 Postscript ... 1189
860+ 860+ Hammerhead ... 3569/4859
Colorscript 210 / 230 ... 4499/7199
Colorscript 1000 Clr Lsr ... In-Stock
PS1725 ... 4349

SEIKO

Smart Label Printer+ DOS/Win ... 139
Smart Label Printer Pro ... 239
CH-4104PSE Color Pstscript ... 2449

TEXAS INSTR

MicroMarc Color ... 389
MicroWriter Basic 5ppm ... 517
MicroWriter PS23 5ppm ... 677
MicroWriter PS65 5ppm ... 928
MicroLaser Pro PS23 8ppm 600dpi 1316**
MicroLaser Pro PS65 8ppm 600dpi 1519

**W/$60 rebate (ends 6/94)
*W/$30 rebate (ends 8/31/94)

DIRECT ORDER LINE

1-800-65-WORKS

(1-800-659-6757)

Fast Shipping, no problem! We deliver when you need it. DHL UPS

24-Hour FAX Line 1-708-459-6933
International line 1-708-459-6884
Customer Service 1-708-459-9410
Technical Support 1-708-459-9411

Circle 171 on reader service card.

We Wrote The Book.

Note

Acer makes notebooks so reliable many of the world's top computer companies put their names on them.

ACER COMPUTERS • THE INDUSTRY SOURCE

Buy Direct From The Industry Source.

With 75MHz, you can't buy a faster notebook.

Desktop Power To Go

Now you can have twice the power of a desktop system in your notebook computer. With the lightning-fast IntelDX4™ processor running at 75MHz, your productivity will reach new heights. After all, if you're busy enough to need a notebook, you sure don't have time to sit and watch the hourglass.

Modularity For Your Notebook

Convenient, upgradable architecture has arrived with the AcerNote 780cx. It features a revolutionary modular design that makes upgrading components and servicing easy. That's important, because when you're traveling with your notebook, your system administrator won't be around to help you.

Add New Features As They Are Announced

As higher capacity hard drives become available, you can plug them in yourself with the easy-to-open Acer SmartCase.™ And look forward to being able to grow into the latest and greatest features as they are announced.

PCMCIA Gives You Easy Communication

You can simply slide in a credit card-sized PCMCIA card that lets you tap into your network, send information to a fax machine via modem, access additional storage devices or plug in more memory. And once you return to the office, you can easily transfer your new data to your desktop.

Count On Dependability With The Industry Source, Acer

Many of the leading notebooks are manufactured by Acer—now you can have the confidence that comes from using the industry source.

AcerNote 780cx IntelDX4™/75MHz

- IntelDX4/75MHz processor with built-in 16KB cache and coprocessor
- 8MB system RAM
- SmartCase™ easy-to-open modular housing for easy upgrades and serviceability
- Easily upgradable 340MB 2.5" hard drive
- Easy-to-remove keyboard for quick memory and BIOS upgrade
- EasyTrac™ centrally located removable trackball
- PCMCIA Type III slot (equivalent to two stacked Type II slots)
- Local bus accelerated graphics
- Suspend-to-Disk feature, "No-Reboot" CMOS setup and Suspend-Resume hot button preserve battery life
- 9.5" active-matrix LCD displays 256 colors
- Simultaneous LCD/CRT display
- Slim 8.66" x 11.4" x 2.1" case weighs 6.4 lbs, including NiMH battery pack
- Graphic battery gauge indicates remaining battery life
- One year 24-hour replacement warranty in the U.S. and Canada

intel inside

NEW

$3,995

$132 A Month Business Lease

With Acer, you can't buy more value.

VISA LEASING

Expandability For Tomorrow, Power For Today

The AcerNote 760 series gives you all the expandability of the 780cx, plus more power than many current desktop PCs. The high performance of the Intel486™DX2/50MHz processor, combined with local bus architecture, gives you the power to take all your projects on the road with you, not just the less demanding ones.

intel inside

AcerNote Gives You Easy Upgrades!

You also get the same convenient, upgradable architecture in the AcerNote 760 series as in the higher-priced 780cx. A revolutionary modular design makes upgrading components and servicing easy. If you're on the road when you need more storage or memory, you can simply plug in off-the-shelf components yourself.

Suspend/Resume Hot Button Saves You Time!

The AcerNote 760 series offers time-saving benefits for the traveler, including the ability for you to jump right back into your applications from where you left off. By using a "hot button" you can close down and re-enter your work instantly, without having to wait for the usual boot-up procedure. This power-saving feature assures a 3-5 hour battery life.

Assistance Around The Globe

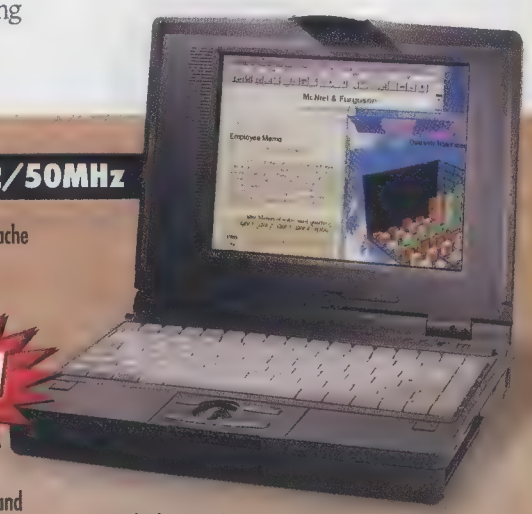
Because the most powerful notebook does you no good if it's not working when you need it, the AcerNote series is backed by a one-year, 24-hour replacement warranty in the U.S. and Canada. To assure you support in over 20 countries worldwide, a free one-year Acer International Travelers Warranty is also included.

International Travelers Warranty

30-Day Money-Back Guarantee.

We are so sure that you'll be totally satisfied with your new Acer system that we're offering a full 30-day money-back guarantee—no questions asked.

AcerNote 760c i486DX2/50MHz

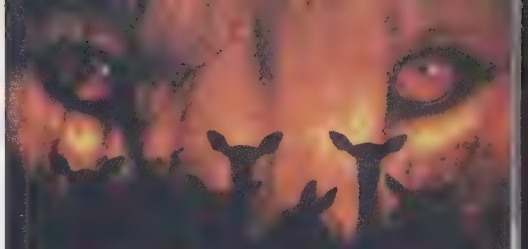


NEW

- i486DX2/50MHz processor with built-in 8KB cache
- 4MB system RAM
- SmartCase easy-to-open modular housing for upgradability and serviceability
- Easily upgradable 350MB 2.5" hard drive
- Easy-to-remove keyboard for quick memory and BIOS upgrade
- EasyTrac centrally located removable trackball
- PCMCIA Type III slot (equivalent to two stacked Type II slots)
- Local bus accelerated graphics
- Suspend-to-Disk feature, "No-Reboot" CMOS setup and Suspend-Resume hot button preserve battery life
- 9.5" dual-scan LCD displays 16 colors
- Simultaneous LCD/CRT display
- Slim 8.66" x 11.4" x 1.8" case weighs 6.4 lbs, including NiMH or NiCad battery pack
- Graphic battery gauge indicates remaining battery life
- One year 24-hour replacement warranty in the U.S. and Canada

$2,595

$95 A Month Business Lease



AcerNote 760cx i486DX2/50MHz The Presentation Performer

- i486DX2/50MHz Processor with Built-In 8KB Cache
- 4MB System RAM
- PCMCIA Type III Slot (Equivalent to Two Stacked Type II Slots)
- 9.5" Active-Matrix LCD Displays 256 Colors
- 350MB 2.5" Hard Disk Drive
- Palmrest with Integrated Trackball
- Local Bus Accelerated Graphics
- MS-DOS 6.2, Microsoft Windows 3.1
- International Travelers Warranty
- 24-hour "Hot Swap" Warranty

$3,495

$128 A Month Business Lease

AcerNote 735c i486SX/33MHz The Value Winner For Presentations

- Intel SL-Enhanced 486SX/33MHz Processor
- 4MB System RAM
- 2 PCMCIA Type II Slots/1 Type III Slot
- 9.5" Dual-Scan LCD Color Display
- 209MB 2.5" Hard Disk Drive
- Palmrest with Integrated Trackball
- Local Bus Video with 512KB VRAM
- MS-DOS 6.2, Microsoft Windows 3.1
- International Travelers Warranty
- 24-hour "Hot Swap" Warranty

$1,995

$73 A Month Business Lease

PCMCIA Fax/Data Modems And LAN Cards

Your office at your fingertips! A removable PCMCIA card allows you to send and receive faxes and data at a rate of up to 14.4 baud, with fax software for simple, error-free operation. LAN cards, with your option of either twisted-pair or coaxial cable, get you into your office network with ease.

Spare Battery/Spare Battery

NiMH Battery Pack **$169**

NiCad Battery Pack

Additional Memory

AcerNote Series—4MB Memory Upgrade **$269**

AcerNote Series—8MB Memory Upgrade **$699**

Acer

Call 800-230-ACER

Monday through Friday 6 AM-6 PM and Saturday 8 AM-4 PM Pacific Time

When calling, please reference #074 ACD

With 90MHz, we're the power source, as well as the industry source.

intel inside pentium PROCESSOR

Acer Brings 90MHz Pentium™ Processor Systems To Market

The 90MHz Pentium chip is the most powerful PC processor selling today. It runs PC software faster than any other processor available. With such dramatic advancements in technology, time to market really matters. As the industry source, Acer can incorporate changes into its product line more quickly than other companies. When you need the latest and greatest hardware, talk to Acer.

Power Of The Pentium

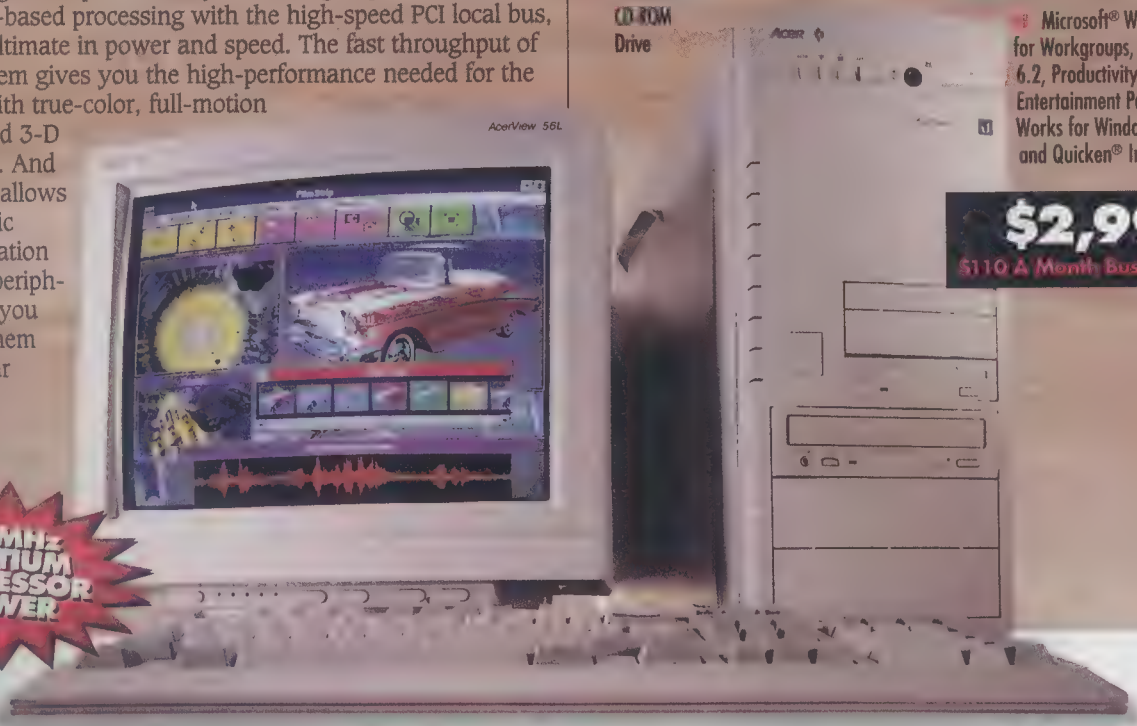
The Pentium processor is fully compatible with the entire range of i486™ and i386™ processors, allowing backward-compatibility with the legion of 486 hardware in use. It has data integrity features for mission-critical applications, and includes multiprocessor capabilities needed by advanced servers and high-performance desktops and workstations. The Pentium processor family utilizes advanced design techniques to speed up today's graphics applications and enable tomorrow's emerging applications, such as full-motion video and computer-aided design.

Join The Revolution With The AcerPower 90MHz Pentium Processor System.

The AcerPower™ Pentium workstation represents the next technological leap forward by combining unparalleled 90MHz Pentium-based processing with the high-speed PCI local bus, for the ultimate in power and speed. The fast throughput of this system gives you the high-performance needed for the future with true-color, full-motion video and 3-D graphics. And PCI also allows automatic configuration of new peripherals as you install them into your system.

- Intel® Pentium/90MHz Processor
- 8MB System RAM (Expandable to 128MB)
- 256KB Second-Level Cache
- 540MB IDE Fast Hard Disk Drive
- PCI Enhanced Local Bus IDE
- Panasonic® 2X CD-ROM Drive
- 15" .28mm Non-Interlaced Flat Screen Digital SVGA Color Monitor
- 1MB PCI Graphics Accelerator Card
- 1.44MB Diskette Drive
- 2 PCI 64-Bit Expansion Slots
- 4 ISA 16-Bit Expansion Slots
- 1 Combination PCI/ISA Slot
- Microsoft® Windows™ for Workgroups, MS-DOS® 6.2, Productivity/Entertainment Packs, Works for Windows,™ and Quicken® Installed

$2,995
$110 A Month Business Lease



90MHz PENTIUM PROCESSOR POWER

Now you can buy Acer direct.

Call 800-230-ACER Monday through Friday 6 AM-6 PM and Saturday 8 AM-4 PM Pacific Time
When calling, please reference #074 ACD

VISA LEASING

AcerPower Pentium/60MHz

- Intel Pentium/60MHz Processor
- 8MB System RAM (Expandable to 192MB)
- 256KB Second-Level Cache
- 420MB IDE Fast Hard Disk Drive
- PCI Enhanced Local Bus IDE
- Panasonic 2X CD-ROM Drive
- 1.44MB Diskette Drive
- 14" .28mm Non-Interlaced Flat Screen SVGA Color Monitor
- 1MB PCI Graphics Accelerator Card
- 2 PCI 64-Bit Expansion Slots
- 4 ISA 16-Bit Expansion Slots
- 1 Combination PCI/ISA Expansion Slot
- Microsoft Windows for Workgroups, MS-DOS 6.2, Productivity/Entertainment Packs, Works for Windows, and Quicken Installed

PC WORLD BEST BUY

$2,595
$95 A Month Business Lease

PC World Best Buy

AcerPower 486DX2/66MHz

- Intel 486DX2/66MHz Processor
- 4MB System RAM (Expandable to 64MB)
- 128KB Second-Level Cache
- 340MB IDE Fast Hard Disk Drive
- Panasonic 2X CD-ROM Drive
- 1.44MB Diskette Drive
- 14" .28mm Non-Interlaced Flat Screen SVGA Color Monitor
- 2 PCI 64-Bit Expansion Slots, 5 ISA 16-Bit Expansion Slots
- 1 Combination PCI/ISA Expansion Slot
- 1MB PCI Graphics Accelerator Card
- Microsoft Windows for Workgroups, MS-DOS 6.2, Productivity/Entertainment Packs, Works for Windows, and Quicken Installed

$1,995
$73 A Month Business Lease

The New Value Leader

Rely On The Strength Of A $1.9 Billion Giant.

Since our start in 1976, Acer has grown to be the vendor of choice for the world's top computer companies. Some of the biggest names in the industry recognize Acer as one of the most quality-conscious PC manufacturers in the world today. Our attention to detail, excellent record of reliability and great value have helped us to achieve status as the world's leading OEM manufacturer. Acer has achieved a solid reputation for innovation after 18 years of building unique computing solutions. You'll get new technology first with Acer. And now you can buy direct from the industry source.

Multimedia Upgrade Kit

Make the most of the new Acer CD-ROM standard with this special multimedia upgrade kit that includes: Sound Blaster and Business Audio-compatible 16-bit sound card; high-performance stereo speakers; Microsoft multimedia bundle with Works, Encarta,™ Golf, Cinemania™ and SoundBits.™

Only $175

A Full Year Of On-Site Service.

Don't worry. If you have a problem with your Acer desktop system, we'll have a skilled service representative out to you in 48 hours—we promise.

Please call 1-800-230-ACER for details on the money-back guarantee, limited warranty and International Travelers Warranty. Return shipping and insurance charges are the responsibility of the customer. Not available in Canada. On-site service may not be available in certain remote locations. Products, availability, prices and programs are subject to change or cancellation without notice. Shipping and handling charges are extra. Acer, AcerAcros and the Acer logo are registered trademarks and AcerNote, AcerPower, AcerView, ChipUp and SmartCase are trademarks of Acer America Corporation and Acer, Inc. Intel and the Intel Inside Logo are registered trademarks and Pentium and the Pentium Processor logo are trademarks of Intel Corporation. All other brands and product names are trademarks or registered trademarks of their respective companies. ©1994 Acer America Corporation. All rights reserved

AcerPower Pentium/90MHz

- Intel Pentium/90MHz Processor
- 16MB System RAM (Expandable to 128MB)
- 256KB Second-Level Cache
- 540MB IDE Fast Hard Disk Drive
- PCI Enhanced Local Bus IDE
- Panasonic 2X CD-ROM Drive
- 1.44MB Diskette Drive
- 2MB PCI Graphics Accelerator Card
- 17" .28mm Non-Interlaced Digital SVGA Color Monitor
- 2 PCI 64-Bit Expansion Slots, 4 ISA 16-Bit Expansion Slots
- 1 Combination PCI/ISA Expansion Slot
- Microsoft Windows for Workgroups, MS-DOS 6.2, Productivity/Entertainment Packs, Works for Windows, and Quicken Installed

$3,795
$139 A Month Business Lease

AcerPower Pentium/90MHz

- Intel Pentium/90MHz Processor
- 16MB System RAM (Expandable to 128MB)
- 256KB Second-Level Cache
- 540MB IDE Fast Hard Disk Drive
- PCI Enhanced Local Bus IDE
- Panasonic 2X CD-ROM Drive
- 1.44MB Diskette Drive
- 2MB PCI Graphics Accelerator Card
- 15" .28mm Non-Interlaced Digital SVGA Color Monitor
- 2 PCI 64-Bit Expansion Slots, 4 ISA 16-Bit Expansion Slots
- 1 Combination PCI/ISA Expansion Slot
- Microsoft Windows for Workgroups, MS-DOS 6.2, Productivity/Entertainment Packs, Works for Windows, and Quicken Installed

$3,395
$124 A Month Business Lease

AcerPower 486DX2/66MHz

- Intel 486DX2/66MHz Processor
- 8MB System RAM (Expandable to 64MB)
- 128KB Second-Level Cache
- 420MB IDE Fast Hard Disk Drive
- Panasonic 2X CD-ROM Drive
- 1.44MB Diskette Drive
- 15" .28mm Non-Interlaced Digital SVGA Color Monitor
- 1MB PCI Graphics Accelerator Card
- 2 PCI 64-Bit Expansion Slots, 5 ISA 16-Bit Expansion Slots
- 1 Combination PCI/ISA Expansion Slot
- Microsoft Windows for Workgroups, MS-DOS 6.2, Productivity/Entertainment Packs, Works for Windows, and Quicken Installed

$2,295
$84 A Month Business Lease

AcerAcros 486DX2/66MHz

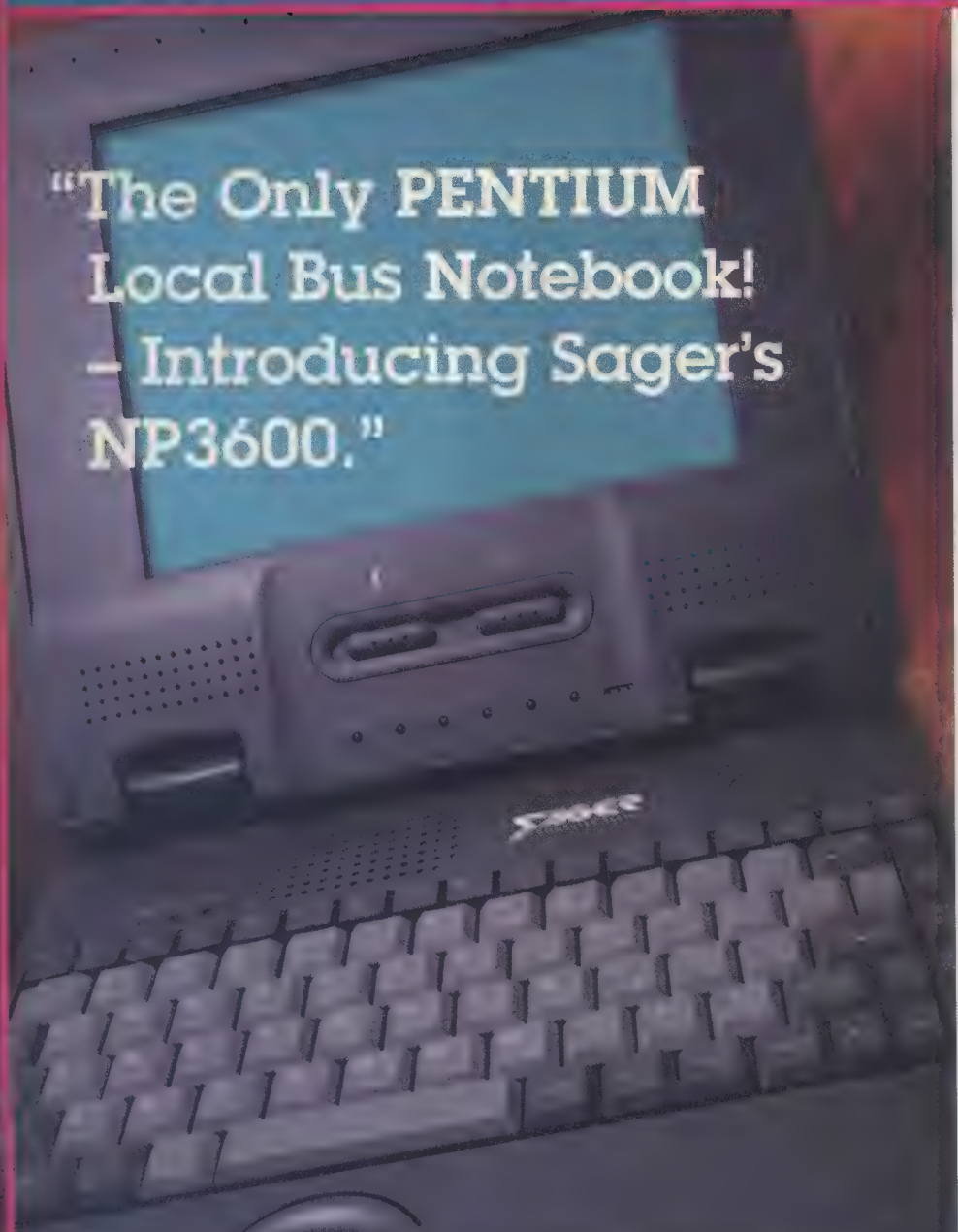
- Intel486DX2/66MHz Processor
- 4MB System RAM (Expandable to 64MB)
- 420MB IDE Fast Hard Disk Drive
- Panasonic 2X CD-ROM Drive
- 1.44MB Diskette Drive
- 1MB VESA Graphics Accelerator Card
- 14" .28mm Non-Interlaced SVGA Color Monitor
- 4 ISA 16-Bit Expansion Slots
- Microsoft Windows for Workgroups, MS-DOS 6.2, Productivity/Entertainment Packs, Works for Windows, and Quicken Installed
- 128KB Cache Upgrade.....$30

$1,795
$66 A Month Business Lease

Acer

P O W E R F U L P

"The Only PENTIUM Local Bus Notebook! – Introducing Sager's NP3600."



NOW MAXIMUM POWER IS AVAILABLE IN PORTABLES WITH SAGER'S PENTIUM & 486 DX-4 NOTEBOOKS.

With more power than most desktops, these Sager notebooks were developed exclusively for performance-driven notebook users. Sager designed and built these systems with one goal – to give you the performance capabilities and features of the most powerful desktop, in a compact, lightweight notebook. These [illegible] powerpacks feature Pentium performance [illegible] compatibility, both Local Bus video and [illegible] audio and more. The result is powerful [illegible] than any other notebook.

PENTIUM NP3600 CONFIGURATIONS

- Intel Pentium™ 60/66MHz CPU
- 1MB Video RAM
- 32-bit VESA Local Bus Video with Windows Accelerator
- 32-bit Local Bus IDE
- Built-In Audio Chip, Microphone, & Speaker
- 8MB RAM Expandable to 40MB
- Removable 250MB Hard Drive (340, 520MB Optional)
- 3.5" 1 44MB Floppy Drive
- 9 5" 640x480 VGA Display, 256 Colors, CRT 1024x768 256 colors
- Simultaneous CRT & LCD Operation
- Extra Large Built-In 25mm Trackball
- 1 Type II &1 Type III PCMCIA Slots
- 46 Watt NiMH Battery
- 1 16C550 Compatible Serial Port
- 1 Parallel Port with ECP/EPP Support
- Ports for Ext Keyboard, Ext VGA Monitor & 200 Pin Connector for Docking Station
- Jacks - 1 line in & 1 line out
- 86-Key Keyboard
- Microsoft DOS 6 21
- Carrying Bag & AC/Adapter
- Weight 8.15lbs. (with Battery)
- 11.14"W x 10.31"D x 2.56"H
- Sager's Umbrella Protection Policy

NP3600 FEATURES

- Intel Pentium™ 64-bit performance
- Super Fast 32-bit VESA Local Bus Video with Windows Accelerator & 1MB Video RAM
- 32-bit Local Bus IDE, improved data transfer rate of up to 45%
- 1 PCMCIA Type III & 1 PCMCIA Type II Slots
- Built-in Audio Chip, Microphone, & Speaker (Now you can record, compress, store and playback voice, sound, and music to disk. Soundblaster and Microsoft Windows Sound System compatible)
- VESA Local Bus Power when used with Optional VL-Bus Docking Station
- 46 Watt Extra Large NiMH Battery
- Extra Large Built-In 25mm Trackball
- Large Palm Rest Area for Easy Typing
- Flash ROM for BIOS Upgrade through software
- 2-Hour Quick Charge

NP3600 / NP7500 OPTIONS

VL-Bus Docking Station
Numeric keypad
Car Adapter
PCMCIA Cards (Fax/Modem, Ethernet LAN Adapter & more)

R T A B L E S

486 NP7500 CONFIGURATIONS & FEATURES

- Intel SL enhanced CPU upgradeable to 486DX4 (486SX>DX>DX2>DX4)
- 1MB Video RAM
- Super Fast 32-bit VESA Local Bus Video with Windows Accelerator
- Super Fast 32-bit Local Bus IDE with improved data transfer rate of up to 45%
- Built-in Audio Chip, Microphone, & Speaker (Now you can record, compress, store and playback voice, sound, and music to disk
- Extra Large Capacity NiMH Battery – No Memory Effect and 40%-50% Longer Running/Operating Timespan
- Large 19mm Trackball Centered on Large Palm Rest Area for Easy Typing
- 2 PCMCIA Type I & II or 1 Type III IC Card Slot
- Flash ROM for BIOS Upgrade through software
- 4MB RAM expandable to 36MB
- Removeable 250MB Hard Drive (340, 520MB Optional) offers flexibility, upgradeability and security
- 3.5" 1.44MB Floppy Drive
- 9.5" 640x480, VGA Display 256 Colors or 64 Gray Shades CRT 1024x768 256 Colors
- Simultaneous CRT & LCD Operation
- 180° LCD Display Angle Rotation
- Built-in System Management Mode (SMM)
- Ports for 1S, 1P, Ext. keyboard, Ext.VGA monitor, & 200 Pin Connector for Docking Station
- Jacks - 1 line in & 1 line out
- 86-Key Keyboard
- Microsoft DOS 6.21
- Carrying Bag & AC/Adapter
- Weight 6.6lbs. (with Battery)
- 11.14"W x 9.48"D x 1.95"H
- 2-Hour Quick Charge
- VESA Local Bus Power when used with Optional VL-Bus Docking Station
- Sager's Umbrella Protection Policy

486 NP700 CONFIGURATIONS

- 1MB Video Ram
- 4MB RAM expandable to 16MB
- Removable 120MB Hard Drive (250, 340, 520MB Optional)
- 3.5" 1.44MB Floppy Drive
- 9.5" 640x480, VGA Display 256 Colors or 64 Gray Shades
- Large Built-In 16mm Trackball (Can be replaced with another module)
- PCMCIA Type I & II Slot
- Ports for 1S, 1P, Ext keyboard/keypad, VGA monitor & AT/Bus for expansion box
- 85-Key Keyboard
- Nickel Metal-Hydride battery
- Microsoft DOS 6.21
- Carrying Bag & AC/Adapter
- Weight 5.5lbs. with Battery
- 11.4"W x 8.6"D x 1.65"H
- Sager's Umbrella Protection Policy

NP700 FEATURES

- Module Pack Area: (Optional) Fax/Modem, PS/2 Mouse+COM 2, Audio
- PCMCIA Slot
- Intel 486 Upgradeable CPU (486SX >486DX >486DX2)
- 180° LCD Display Angle Rotation
- 2-Hour Quick Charge
- NiMH Battery. No memory effect, Longer Battery Life
- External Battery Pack. (Optional) Doubles Running Hours Screws Into Bottom Back of Notebook Raising & Angling Keyboard for Easy Typing

NP700 OPTIONS

FAX/Modem Module
PS/2 Mouse + COM 2 Port Module
Audio Module
Internal/External Battery Pack
Numeric Keypad
Car Adapter
Expansion Box
PCMCIA Cards (Fax/Modem, Ethernet LAN Adapter & more)

NP700

S A G E R S Y S T E M S

	MONO	COLOR DUAL SCAN	COLOR ACTIVE MATRIX
NP3600/PENTIUM-60		$3395	$4395
NP3600/PENTIUM-66		$3595	$4595
NP7500/486SX-33	$1675	$2175	$3175
NP7500/486DX-33	$1825	$2325	$3325
NP7500/486DX2-66	$1995	$2495	$3495
NP7500/486DX4-100	$2245	$2745	$3745
NP700/486SX-25	$1345	$1825	
NP700/486DX-33	$1495	$1975	
NP700/486DX2-66	$1645	$2125	

SAGER'S

UMBRELLA PROTECTION POLICY

Two-Way 30-Day Money-Back Guarantee

[illegible]

48-hour Repair Promise.

[illegible]

72-hour Repair Promise

[illegible]

1-Year Parts and Labor Limited Warranty.

Lifetime Toll-Free Technical Support

[illegible]

DEALER VAR. GOVERNMENT. & CORPORATE SPECIAL PROGRAMS

[illegible]

- 2 [illegible] VESA Local Bus Slots
- 2 16 bit ISA Slots
- 3.5" HDD bay
- 1 CD ROM [illegible] HDD bay
- Ports for 2S, 1P, Ext. Keyboard
- VGA Monitor
- 2 Internal speakers
- Internal [illegible] 220v
- 120w power supply
- 14.5"W x 14.4"D x 4.2"H
- Large Load Pattern for External Monitor

Call Now

SAGER

The Portable Power People

800.869.1634

[illegible]

- Lifetime Toll-Free Technical Support
- One Year Parts and Labor Warranty
- 30-Day Money Back Guarantee
- American Express, VISA, MasterCard, Discover, Government, A.O.L. [illegible]
- Cashier's Check, Wire Transfer
- Hours: Mon.-Fri. [illegible] 8 AM-6 PM
- Sat. [illegible] AM-[illegible] PM (EST)

[illegible]

FOR CURRENT PRICING CALL NOW

MEMORY · MEMORY · MEMORY

LAPTOP & NOTEBOOK MEMORY

AST

PowerExec 4/25SL	4MB	$179
	16MB	$769
PowerExec 3/25SL, 3/25SL-C, EL	4MB	$189
Premium Exec 286, 386SX/20, 25, 25C	4MB	$149
NEW Bravo NB 486	4MB	$205
	16MB	$949

Compaq

NEW Aero	4MB	$249
	8MB	$429
NEW Concerto 486	4MB	$269
	8MB	$559
Contura 3/20, 3/25, 3/25c	4MB	$175
	8MB	$325
Contura 4/25 series	4MB	$189
	8MB	$365
LTE 386S/20	4MB	$229
LTE Lite 20; 25; 25c, 25e	4MB	$229
	8MB	$395
	16MB	$789
LTE Lite 4/25c	4MB	$219
	8MB	$399
SLT 386s/20	4MB	$199

IBM

NEW PS/2 CL57SX and ThinkPad 700, 700c, 720, 720c	4MB	$209
	8MB	$389
	16MB	$1059
NEW ThinkPad 710T	4MB	$189
	8MB	$319
N51 Notebook (All)	2MB	$99
	4MB	$189
L40SX, N33SX, PS/Note 182	4MB	$185
L40SX, PS/Note 182	8MB	$359

NEC

NEW UltraLite Versa (all models)	4MB	$229
	8MB	$449
(Excluding 40E & 50E models)	16MB (3.3V)	$959
UltraLite III, SL/25C	2MB	$79
	4MB	$169
UltraLite SL/20, SL/20P	2MB	$79
	6MB	$259
ProSpeed 286, 386SX/16	4MB	$179

Texas Instruments

TravelMate 3000 (all models)	2MB	$79
NEW TravelMate 4000 (all models)	4MB	$189
TravelMate WinSLC/25	2MB	$129

Toshiba

T1000SE/LE/XE; 2000, 2000SX; SXe, T2200SX, T1800 Series	2MB	$99
	4MB	$179
	8MB	$329
T1200XE, 1600, 3100E	2MB	$89
T3100SX, 3200SX, SXC	2MB	$79
	4MB	$169
T3300SL	4MB	$169
	8MB	$399
	16MB	$935
NEW T3400	4MB	$229
	8MB	$449
T4400, T6400 (all models)	4MB	$209
	16MB	$699
NEW T1900, T4500, T4600, T4700 (all models)	8MB (3.3v)	$469
	16MB (3.3v)	$959
T5400, T5200; T5200C, T8500	2MB	$89

Zenith

NEW Z-Note 320L, 320Lb, 325L, 325Lc	2MB	$108
	8MB	$384
NEW Z-Note 425 Series	8MB (3v)	$549
Z-Sport 420S, 425S	4MB	$188
MastersPort 386SL, SLC, SLe	2MB	$90
MastersPort 386SX	2MB	$89
SupersPort SX; 286e; SlimsPort	2MB	$139
SupersPort 286; 286e	1MB	$139
SupersPort 286e; SlimsPort	4MB	$199

Great Value! SIMMS

1x9 (3-chip) $43
4x9 .... $155
1x36 ...... $181
2x36 ...... $354

1MB x 9-70ns (9 chip)	$46
512K x 36-70 (2MB)	$85
4MB x 9-70ns	$155
1MB x 36-70 (4MB)	$181
2MB x 36-70 (8MB)	$354

US ROBOTICS

WorldPort™
Fax/Data PCMCIA 2.0 Modem

The credit card-sized fax/data modem from the leader in computer communications.
WorldPort 14,400 Fax PCMCIA transmits both data & fax at 14,400 bps, and with V.42/MNP® 2-4 error control & V.42bis data compression, achieves throughput up to 57,600 bps. With QuickConnect™, a U.S. Robotics' exclusive, it handshakes & gets to work in under 10 seconds!

$249 ORDER NOW!

FAX/MODEMS

Megahertz

PCMCIA 2.0 Data/Fax with XJACK

NEW 14,400bps FAX/Modem/14,000bps FAX/Modem Gold	$289/$319
24/9600bps FAX/Modem	$179

U.S. Robotics

WorldPort 14,400 Fax, PCMCIA	$249
Sportster 14,400 Fax, External	$145
Sportster 14,400 Fax, Internal	$125

MONITORS

ADI

("P" models meets EPA Energy Star requirements)

MicroScan 3E+, 14" .28 dpi, 1024x768 NI @ 72 Hz	$349
MicroScan 3G/3GP, 14" .28dpi, Hi-res. RGB color adjust	$349/$379
MicroScan 4G/4GP, 15" .28 dpi, Flat, Hi-res monitor	$429/$459
MicroScan 5EP, 17" .28dpi, Flat, Hi-res, man degauss	$769
MicroScan 5AP, 17" .26dpi, Flat, Hi-res, man degauss	$819

CPU UPGRADES

Kingston

SX/Now! 386 CPU Upgrade

25MHz (SX)	$169
33MHz (SX)	$199

SLC/Now! 486 CPU Upgrade

25MHz (SLC)	$219
50MHz (SLC)	$299

Cyrix

486 Upgrades

NEW Cx486DRx² 33/66	$349
Cx486DRx² 16/32	$269
Cx486DRx²-20/40	$269
Cx486DRx² 25/50	$309
Cx486SRx² 25/50	$269
NEW Cx486SRx²-20/40	$249
Cx486SRx²-16/32	$269

Intel

Intel Math

80387SX 16, 20, 25MHz	$85
80387DX 16, 20, 25, 33MHz	$89
80387SL Mobile 16, 20, 25MHz	$85

Intel OverDrive Processors

486SX20 with socket	$309
486SX25 with socket	$309
486DX25 without socket	$309
486DX33 without socket	$431
486DX33 or 486SX33 with socket	$431

PERSONAL COMPUTER MEMORY

AST

NEW Premmia					
4MB	501159 001	$152	8MB	501159-002	$369
Bravo 3/25s					
2MB	500710-004	$96	8MB	500824-002	$319
Advantage! 386SX/20; 25, Advantage! Pro SX/25, Bravo 3/33s					
2MB	500962 001	$89	8MB	500962-002	$289
Advantage! Pro 486DX/33; SX/25, Bravo LC 4/25s; 33; 33s; 50d; 4/66d					
2MB	500987-001	$72	4MB	500987 002	$159
Premium 386/25; 33; 33T, Premium II 386SX/16; 20; 25					
1MB	500780 003, 002				$47
Advantage! 486/25; 33; 33p; SX20, Bravo 4/33; 486/25; Premium 4/25; 33TE, Server SE 4/33					
2MB	500718 004; 780-005				$69
Advantage! 486/25; 33; 33p; SX20, Power Premium 3/33, 4/33; 33s; 50d; 66d, Premium 386/33TE, 486/25; E; 25TE; 33; 33E; 33TE, Premium II 386/25; 33, 486/33, 486SX/20 Premium Server SE 4/33					
4MB	500780-004	$179	8MB	500780-001	$358

Compaq

ProLinea 3/25s; 3/25zs					
2MB	141738-001	$89	8MB	141742-001	$319
NEW ProLinea 4/25s, 4/33, 4/50					
1MB	141682 001	$39	2MB	141683-001	$85
4MB	141684 001	$181	8MB	141685 001	$354
DeskPro 386-20, 20e, 25					
4MB	113132-001	$180	4MB	113645-001	$244
DeskPro 386s/16					
4MB	112534-001	$180	4MB	113634-001	$255
NEW DeskPro 3/25i; 33i,4/25IS; 33i; 66i, 286N; 386N; 386SX/20; 20N, SystemPro LT Series, Portable 486c, M Series					
2MB	118689 001				$85
4MB	118690 001	$181	8MB	112877-001	$354
ProSignia PC Server 486/33; DX2/66					
16MB	149320 001				$649
DeskPro 386-33, 486-33, SystemPro					
2MB	115144-001	$99	8MB	116561-001	$379

Dell

Power Desktop 325D; P, 333D, 333P, 433P, 486P, 486D					
4MB	310 2507				$181
PowerLine Workstation 420; 425; 433; 450; 450DE/2, 466DE					
2MB	310 2466	$85	8MB	310 2468	$362
NEW PowerLine Workstation 420; 425; 433; 450; 450SE/2, 466SE					
32MB Kit	310 2630				$1280
Performance T, L, & M series					
4MB	310 3315	$181	16MB	310 3317	$640

Hewlett-Packard

Vectra QS/16S; 20PC, RS/20; 20C; 25, 25C					
4MB Kit	D1542 or 1642A				$189
Vectra 386/16N, 386/20N, 386/25N PC					
2MB	D2406A	$92	8MB	D2404A	$310
Vectra 486PC; 25T; 33T; 486s/20; 4/25N; 33N; 50N; 66N					
2MB	D2381A	$85	8MB	D2152A	$354
Vectra 386/25; 486/25U; 486/33U; 486/50U; 486/66U					
2MB	D2381A	$85	8MB	D2152A	$354
Vectra 386/33N; 33NI					
2MB	D2714A	$92	8MB	D2715A	$310

IBM

NEW AMBRA Enterprise 386, Hurdla 386, Sprinta 386 (all models)					
2MB	N/A	$94	8MB	N/A	$329
NEW AMBRA Enterprise 486, Hurdla 486, Sprinta 486 (all models)					
4MB	N/A	$195	16MB	N/A	$659

PS/1 286, 386SX		
2MB	92F9935	$82
4MB	92F9694	$168
PS/1 Consultant, Essential, Expert models x43, x44, PS/Valuepoint all models except Cxx series		
4MB	96F9290	$199
PS/1 Consultant, Essential, Expert models x76		
16MB Kit	96F9291	$700
PS/2 25/286, 30/286, memory adapter 1497259		
2MB Kit	30F5360	$81
PS/2 35SX; LS, 40SX, 50Z, 55SX; LS, 65SX; LS, 70, XStation		
2MB	6450604	$85
PS/2 70-A21; A61; B21; B61, PS/1 Consultant, Essential, Expert models x11, x13, x14, PS/Valuepoint Cxx series		
2MB	6450608	$85
PS/2 35SX; LS, 40SX, 55SX; LS, 65SX; LS, XStation, PS/Valuepoint Cxx series, adapter board 34F3011 or 34F3077		
4MB	34F2933 or 87F9977	$181
PS/2 35SX; LS, 40SX, PS/Valuepoint Cxx series		
8MB	6450129	$354
PS/2 90 XP, 95 XP, P75 (pairs), 56, 57 (all), PS/1 Pro M2123		
2MB	6450902	$85
PS/2 90 XP, 95 XP, P75 (pairs), 56, 57 (all), PS/1 Consultant, Essential, Expert models x11, x13, x14, PS/1 Pro M2123		
4MB	6450128	$181
8MB	6450130	$354
Expansion boards for 50, 50Z, 55SX, 60, 65SX		
2 8MB w/2MB	1497259	$199

NEC

NEW Image 425, 433, 466		
4MB	410-12002	$181
16MB	410-12003	$647
Ready 425, 433		
4MB	N/A	$195
16MB	N/A	$649
PowerMate 286/12; SX/16, SX/20		
2MB Kit	OP-410-8103	$96
PowerMate SX/20		
2MB CPU Upgrade	OP-410-8101	$159
2MB Exp. Board	OP-410-8102+8103	$180

Zenith

Z-Server 425SE, 433DE, 450DE		
4MB	ME-432	$152
8MB	ME-102	$362
Zenith Z-386/20; 25; 33, 33E		
1MB	ZA3800ME	$39
4MB	ZA3800MK	$181
Zenith Z-386SX/20, 286LP+, Z-LS		
2MB Kit	Z 605 1	$92

LASER MEMORY

Canon LBP-4, 4Lite, 4Plus					
1MB	S63-2230	$106	2MB	N/A	$145
Epson EPL 6000					
2MB	IBS401	$120	4MB	N/A	$198
Epson ActionLaser II, EPL-8000					
2MB	N/A	$135	4MB	N/A	$213
NEW HP LaserJet IIIsi, 4, 4M, 4Si, 4SiMX, XL300, InkJet 600					
4MB	C2065A	$181	8MB	C2066A	$354
HP LaserJet IIP, III, IIIP, IIID					
2MB	33475B	$97	4MB	33477B	$179
HP LaserJet II & IID					
2MB	33444B	$110	4MB	33445B	$195
IBM Laser 4029 all models					
2MB	1183334	$96	4MB	1183335	$157
OkiLaser 400					
1MB	70014701	$67	2MB	N/A	$106
Panasonic 4410 & 4430					
2MB	KX-P444	$126	4MB	N/A	$191
Panasonic 4450I & 4420					
2MB	KX-P441	$129	4MB	N/A	$189
Texas Instruments Microlaser and XL					
1MB	2555739-0001	$46	4MB	2560052-0002	$199

SATISFACTION 30 DAY GUARANTEE

WE SET THE STANDARD:

- MEMORY GUARANTEED - 100% COMPATIBLE IN FORM, FIT, AND FUNCTION
- ALL PRODUCTS USER INSTALLABLE
- INSTALLATION INSTRUCTIONS INCLUDED WITH MOST MEMORY PRODUCTS
- FREE TECHNICAL SUPPORT
- CORPORATE PO'S, APO/FPO'S WELCOME
- GOVERNMENT AND EDUCATIONAL PRICING
- INTERNATIONAL ORDERS WELCOME
- SPECIAL VOLUME PRICING
- OVERNIGHT DELIVERY AVAILABLE
- VISA, MASTERCARD, AMERICAN EXPRESS, AND DISCOVER ACCEPTED
- NO SURCHARGE ON CREDIT CARDS

DON'T SETTLE FOR LESS!

CALL FOR ANY MEMORY UPGRADE NOT LISTED

800-636-9866

714-448-7750

714-448-7760

BUSINESS HOURS:
Monday - Friday, 7am-5pm, P.S.T.
Saturday, 9am-3pm, *Orders Only*

First Source International

MAIL OR FAX ORDERS TO:
First Source International, Inc.
7 Journey
Aliso Viejo, CA 92656

First Source International, Inc. will gladly replace any defective or incompatible product within 30 days of the original invoice date. Defective memory products for replacement only. Opened software is non-returnable. Returns are subject to a 20% restocking fee. Freight charges are non refundable. A Return Merchandise Authorization (RMA) number is required for all returns, please contact our customer service department. Memory products are third party manufacturer's numbers are for your convenience. Due to I.T.C. tariffs placed on some manufacturers, memory pricing may be higher than advertised. Prices and availability are subject to change without notice. Purchase prices at the time of order are final. First Source International cannot be responsible for errors in typography or photography. Trademarks and registered trademarks are of their respective companies.

CALL THE UPGRADE EXPERTS 800-636-9866

20,000 PRODUCTS 24 HOURS A DAY.

NETWORKING

3Com

Etherlink III 10 Base-T 3C5Ø9 129
Etherlink III BNC 5pk 3C5Ø9 549
Etherlink III BNC 20pk 3C5Ø9CØ .. 2,049
Etherlink III TP 3C5Ø9TP 129
Etherlink III TP 5pk 3C5Ø9T-5 509
Etherlink III TP 20pk 3C5Ø9T2Ø 2,049
Etherlink III Combo TP/BNC 139
Etherlink III Combo TP/BNC 5pk 599
Etherlink III EISA BNC 239
Etherlink III EISA BNC 5pk.. 1,049
Etherlink III EISA TP 3C579TP 239
Tokenlink III 3C619 479

ARTISOFT Revolutionizing Connectivity

Lantastic 6 0 Single User 3 5" NWAS9ØØ16Ø $79
Lantastic 6 0 Starter Kit BNC NWAS9ØØ26Ø. . 349
Lantastic 6.0 Add On Kit NWAS9ØØ36Ø . . 159
Lantastic 6 0 5-User 3 5" NWAS9ØØ165. . . . 329

SMC

Ethernet+ Elite 16T $129
Ethernet+ Elite 16T 6 Pack 679

Thomas Conrad

TC-4045 16/4 Token Ring....$349

intel

Intel Ether Express 16 .... $99
Intel Ether Express 16TP 105
Intel Ether Express FlashC....129
Intel Ether Express EISA Coax....429

Novell Netware V 4.01

*Available only on CD
5 User $829
50 User 3,699
100 User 4,999
250 User 8,999
1000 User. 27,999

Xircom

PE3-10B2 Pocket Ethernet BNC....$269
PE3-10BC Pocket Ethernet combo....299
PE3-10BT Pocket Ethernet TP....269
PPX-03 Parallel Port Multiplexor....89
PT02-16BT Token Ring 16/4 RJ-11 549

MEMORY/SIMM

Kingston

1MB x 9 80ns. ....$Call
1 MB x 9 70ns .... Call
256KB x 9 70ns .... Call
4MB x 9 70ns .... Call
512 x 36 2MB .... Call
1 x 36 4MB.. .... Call
2 x 36 8MB.. .... Call
4 x 36 16MB .... Call

PCMCIA CARDS

Megahertz

2400/9600 bps MBXJ124FM.... $199
14 4/14.4 bps. MBXJ1144.... 329

intel

Intel Fax/Modem 2400/9600 bps 159
Intel Fax/Modem 14 4/14 4 bps.... 239

Xircom

Xircom Network combo. 259
Xircom Network RJ-45. 229
Xircom Network BNC. 229

U.S. Robotics

US Robotics Fax/Mdm 14 4/14.4 bps. 259

Kingston

Type II Ethernet BNC/Thin Coaxial $179
Type II Data Rex 14 4 F/M Cellular ready. 249
Type II Ethernet RJ-45/10 Base-T. 159

INTEL OVERDRIVE

intel

OverDrive 486SX20 .... $329
OverDrive 486SX25.. 439
OverDrive 486DX25.... 449
OverDrive 486DX33 579

MODEMS

intel

Intel Internal 14.4 modem.... $139
Intel SatisFAXtion 400 289
Intel SatisFAXtion 400e. 329

Hayes

Hayes Ultra 96 Modem $589
Hayes Ultra 144 Modem 659
Hayes Optima 24+ Fax 96.... 159
Hayes Optima 96/SC EZ 349
Hayes Optima 144/SC EZ. 439

PRACTICAL PERIPHERALS.

PM14400FXMT Ext V 32bis.... $239
PM14400FX PKT Pocket V 42bis 349
PM14400FX Internal V.42bis 219
PM14400FXSA External LCD.... 389
PM14400FX Internal d/f 219

U.S. Robotics

Courier V.32 Turbo Fax Ext 19.2.... $399
Courier V.32 Turbo Fax Int. 19.2.... 369
Sportster 14 4 FAX V.42bis Ext.... 159
Sportster 14 4 FAX V.42bis Int.... 129

SOFTWARE

The lowest prices on thousands of titles.

MONITORS

HITACHI

15" SuperScan CM1586 .... $469
17" SuperScan Elite CM1797 1,099
17" SuperScan 17S CM1764S.... 869
20" SuperScan 20s CM2Ø95MU 1,349
20" SuperScan Pro CM2Ø87 1,649
21" SuperScan Elite CM2188.... 2,299

NEC

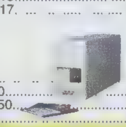
15" MultiSync 3FGe CMNEC3FGe. $639
15" MultiSync 4FGe CMNEC4FGe.... 679
17" MultiSync 5FGe CMNEC5FGE.. 1,079
21" MultiSync 6FG CMNEC6FGP..... 2,599

MAG

15" MAG CMDX15.... 399
17" MAG CMDX17. 699

UPS

APC American Power Conversion



Surge Arrest. $19
Backup-UPS 600.... 259
Backup-UPS 1250.... 499
Smart-UPS 400 289
Smart-UPS 600.... 349
Smart-UPS 900 559
Smart-UPS 1250 699
Smart-UPS 2000. 1,169

UPSONIC

PC Might 25.. .... $89
PC Might 35 w/Upsaver software.... 149
PC Might 55 w/Upsaver software.... 239

TRIPP LITE

Stik - 6.... $19
Isobar 6 outlet.... 49
CCI 6 Plus 69
BC 600LAN, 600VA, 4 outlets, LAN port.... 259
BC 900LAN, 900VA, 4 outlets, LAN port.... 369
BC 1250LAN, 1250VA, 4 outlets, LAN port.... 469
Omni 135VA LAN.... 729

Double speed!

CD-ROM DRIVES

CHINON

Model CDS535
Bare.... $359 Kit.... $429

NEC

Model 3xl Internal Bare $449
Model 3xe External Bare.... $559
Model 4x External Bare.. .... $999

Talon

Talon Bare 320ms/300KB $159
Talon DS-200 245ms/330KB 349
Mitsumi Bare. 179

PLEXTOR

Model DM-3028
Internal bare....$269 Kit....$299
External bare ....379 w/controller....409

TOSHIBA

Model 3401
Bare... .... $359 Kit. $429

MULTIMEDIA

CREATIVE

Sound Blaster Pro Deluxe.. .... $89
Sound Blaster MIDI Kit.... 59
Sound Blaster 16 Multi-CD.... 169
Sound Blaster 16CD ASP.... 209
Sound Blaster 16 SCSI. 199
Sound Blaster Deluxe 69
Sound Blaster 16 SCSI ASP.... 219
Sound Blaster 16 Basic.... 119
Sound Blaster Pro Deluxe 8 Bit.... 89
SBS3ØØ Yamaha Speaker Set. 99
Video Spigot for Windows.. 249
Video Blaster.... 349
Wave Blaster Board.. 189

MEDIA VISION

Pro AudioSpectrum 16 SoundCard... $129
ProAudio Studio 16 w/mic.... 169
ProMovie Spectrum.... 309
RENO External CD-ROM Drive.... 289
Family Deluxe MM Kit.... 339
Super Deluxe MM Kit.... 419
Premium Deluxe MM Kit.. 519
Pro Deluxe MM Kit. 719

REVEAL

MultimediaFX-01.... $299
MultimediaFX-02 - Int. drive double speed, 300KB transfer, 16 Bit sound, speakers, microphone and 8 titles.. $349
MultimediaFX-04 - Int. drive double speed, 300KB transfer, 16 Bit sound, speakers, microphone and 15 titles. $479
MultimediaFX-08 - Int. drive double speed, 300KB transfer, 16 Bit sound, speakers, microphone and 34 titles .. $599

REMOVABLE STORAGE

FUJITSU

Fujitsu Int MO 230MB (PC).... $1,099
Fujitsu DynaMO (Mac or PC) 899
Bernoulli 9Ø Pro Internal Kit 399

Bernoulli Multidisk Insider 150 IDE
210MB Kit BEMD21ØK $399
505MB Kit BEMD5Ø5K 599
1050MB Kit BEMD1Ø5ØK. 799

PRINTERS

Canon

BJ-10SX CNBJ1ØSXW.... $249
BJ-200E Bubble Jet CNBJ2ØØE.... 289
BJ-230 CNBJ23Ø 399
BJC-600 Color CNBJC6ØØ 589
LASER LBP 43Ø CNLBP43Ø.. 589
LASER LBP 86Ø CNLBP86Ø.. 1,389

EPSON

Epson LX 300 EPSLX3ØØ.... $169
Epson AP3250.... 174
Epson LQ-570+ 239
Epson LQ-870. 439
Epson LQ-2550 Color.... 879
Epson DFX-5000.... 1,319
Epson DFX 5000+ EPSDFX5+ 1,379
Epson Stylus 800. 319
Epson Stylus 1000 EPSST1ØØØ.... 445
Epson Action Printer 3260.... 199

HEWLETT PACKARD

HP DeskJet 310 MAHPDJ31Ø.... $289
HP DeskJet 500C HPDJ5ØØC.... 369
HP DeskJet 56ØC HPDJ56ØC.... 539
HP DeskJet 520 HPDJ52Ø 269
HP LaserJet 4L.... 649
HP LaserJet 4P 985

LEXMARK by IBM

2380 LEX238ØØ2....$319
2381 LEX2381ØØ2. 449
2390 LEX239ØØØ2 329
2391 LEX2391ØØ2 449
4Ø37 5E Laser LEX37Ø5E 649
4Ø39 10R LEX4Ø391ØR 1,339
4Ø39 12R plus LEX4Ø3912R.... 1,499
4Ø76 Exec Jet II LEX4Ø76ØØ1.... 279

NEC

P32ØØ 24 Pin NCMDL32ØØ....$229
P62ØØ 24 Pin NCMDL62ØØ.... 424
Silentwriter 1Ø97 NCMDL1Ø97.. 1,429

OKIDATA

OL41ØE Laser.... $629
OL81Ø Laser 929
OL85Ø Laser 1,239
ML38Ø Dot Matrix.... 219
ML184 Dot Matrix.... 229
ML32Ø Dot Matrix.... 299
ML395C Dot Matrix.. 1,019
ML521 Dot Matrix.... 488
OL 83Ø+ Dot Matrix.... 1,079

Panasonic

KX-P2Ø23 Dot Matrix....195
KX-P2124 Dot Matrix.... 315
KX-P3624 Dot Matrix....409
KX-P44ØØ SideWriter... 599
KX-P45ØØ SideWriter.. 899

TEXAS INSTRUMENTS

TI MicroWriter LED 5ppm 512K $499
TI MicroWriter PS23 LED 5ppm 2MB 679
TI MicroWriter PS65 LED 5ppm 2MB.... 929
TI Microlaser Pro PS23.... 1,349
TI Microlaser Pro PS65 1,529
TI microMarc 279
TI microMarc color TEX1Ø23C.... 309

TAPE BACKUPS

COLORADO MEMORY SYSTEMS

250MB COJUMBO25Ø $169
120MB COJUMBO. 99
Trakker 250MB CØJT20.... 329
Trakker 120MB CØJT1Ø.... 219

CONNER

TapeStor 250MB Internal A25Ø.... $149
TapeStor 250MB Ext. Par. A25ØEP.... 339

EXABYTE

8mm 5.0Gig Model 85Ø5.... $2,299
8mm 2.2Gig Model 82Ø5.... 1,599
8mm Tape Cartridge. 15

IOMEGA

Iomega Tape250 Internal Basic .. . $169
Iomega Tape250 Insider Half-height . 189
Iomega Tape250 PC Powered Ext.... 319

Talon 250MB Internal

w/2 unformatted tapes TBTA25ØIK... $179
w/5 formatted tapes TBTA25ØIK5.... 229
Parallel Port w tape TBTAJT2Ø....319

WangDAT.

4mm DAT 2GB Int. 16 Bit Kit.... $899
4mm DAT 4GB 3200 Int. 16 Bit Kit....1,049
4mm DAT 4GB 3200 Ext. 16 Bit Kit....1,199
4mm DAT 8GB 3400 Int. 16 Bit Kit . 2,399

HARD DRIVES

From the Mass Storage Experts.

Caviar — HARD DRIVES International

Capacity	Interface	Model	Access	FF/Height	Bare	Kit
WESTERN DIGITAL						
170MB	IDE	WDAL217Ø	12ms	2.5"	$319	319
200MB	IDE	WDAL22ØØ	12ms	2.5"	339	359
210MB	IDE	WD121ØA	12ms	3 5" 1"H	209	229
270MB	IDE	WD127ØA	12ms	3.5" 1"H	229	249
250MB	IDE	WD225ØA	12ms	3 5" 1"H	219	239
340MB	IDE	WD234ØA	12ms	3.5" 1"H	259	289
420MB	IDE	WD242ØA	12ms	3.5" 1"H	279	309
540MB	IDE	WD254ØA	12ms	3.5" 1"H	389	409
730MB	IDE	WD27ØØA	12ms	3.5" 1"H	549	569
1080MB	IDE	WD31ØØØA	10ms	3.5" 1"H	749	769
CONNER						
213MB	IDE	CFS21ØA	14ms	3.5" 1"H	$219	$239
340MB	IDE	CFA34ØA	13ms	3.5" 1"H	309	329
340MB	SCSI	CFA34ØS	13ms	3.5" 1"H	349	449
426MB	IDE	CFS42ØA	14ms	3 5" 1"H	359	379
540MB	SCSI	CFA54ØS	10ms	3 5" 1"H	679	779
1060MB	SCSI	CFP1Ø6ØS	9.5ms	3 5" 1"H	899	999
FUJITSU						
510MB	IDE	FJ2624A	12ms	3 5" HH	$499	$519
520MB	SCSI	FJ2624S	12ms	3.5 HH	489	589
1080MB	SCSI	FJ2694S	10ms	3 5" HH	799	899
Maxtor						
130MB	IDE	MX7131A	15ms	3.5" 1"H	$189	$209
250MB	IDE	MX7245A	15ms	3 5" 1"H	239	259
250MB	SCSI	MX7245S	15ms	3 5" 1"H	249	349
340MB	IDE	MX7345A	12ms	3.5" HH	289	309
340MB	SCSI	MX7345S	12ms	3 5" HH	349	449
MICROPOLIS						
976MB	IDE	MC2210A	10ms	3.5" HH	$779	$799
1050MB	SCSI	MC4110S	8.5ms	3 5" HH	799	899
1050MB	SCSI	MC2210AV	10ms	3 5" HH	899	999
1626MB	IDE	MC2217A	10ms	3.5" HH	1,089	1,109
1690MB	SCSI	MC2217AV	10ms	3 5 HH	1,199	1,299
1750MB	SCSI	MC2217S	10ms	3 5" HH	1,079	1,179
2100MB	SCSI	MC1926	11ms	5.25 FH	1,399	1,499
3000MB	SCSI	MC1936	11ms	5 25" FH	2,069	2,169
3000MB	SCSI	MC1936AV	10ms	5.25" FH	2,049	2,149
Seagate						
130MB	IDE	ST3145A	15ms	3.5" 1"H	$189	$209
210MB	IDE	ST3243A	14ms	3.5" 1"H	209	229
260MB	IDE	ST329ØA	16ms	3 5" 1"H	219	239
340MB	SCSI	ST339ØN	11ms	5 25" FH	379	479
452MB	IDE	ST355ØA	12ms	3.5" 1"H	339	359
452MB	SCSI	ST355ØN	12ms	3 5" 1"H	529	629
528MB	IDE	ST3655A	12ms	3 5" 1"H	389	409
540MB	SCSI	ST3655N	12ms	3.5" 1"H	589	689
1050MB	SCSI	ST312ØØN	9.5ms	3.5" 1"H	769	869
1700MB	SCSI	ST1195ØN	8ms	3.5" 1"H	1,499	1,599
1700MB	SCSI	ST119ØØN	9ms	3.5" HH	1,099	1,199
2100MB	SCSI	ST124ØØN	10.5ms	3.5" HH	1,449	1,549
2145MB	SCSI	ST1255ØN	8ms	3.5" HH	1,699	1,799
2900MB	SCSI	ST434ØØN	11ms	5.25" FH	2,049	2,149
9080MB	SCSI	ST41Ø8ØØN	11ms	5.25" FH	3,995	4,095
Quantum						
170MB	IDE	QULPS17ØA	14ms	3.5" 1"H	$199	$209
170MB	SCSI	QULPS17ØS	14ms	3 5" 1"H	199	299
270MB	IDE	QULPS27ØA	12ms	3.5" 1"H	269	259
270MB	SCSI	QULPS27ØS	12ms	3.5" 1"H	279	379
340MB	IDE	QULPS34ØA	12ms	3.5" 1"H	279	299
340MB	SCSI	QULPS34ØS	12ms	3.5" 1"H	299	399
540MB	IDE	QULPS54ØA	12ms	3.5" 1"H	439	499
540MB	SCSI	QULPS54ØS	12ms	3.5" 1"H	439	539
1080MB	SCSI	QUEM1Ø8ØS	9ms	3.5" 1"H	779	879
1225MB	SCSI	QUPD1225S	10ms	3.5" HH	949	1,049
1800MB	SCSI	QUPD18ØØS	10ms	3.5" HH	999	1,099

NOTEBOOK COMPUTERS

NEC

Versa E 486 DX2 40 or 50MHz, 4MB RAM/Exp. to 20MB, 2 type II PCMCIA, MS-DOS 6 2, Windows 3 1, built-in trackball.
Color 250MB HD 40MHz NCV44Ø1531.... 4,229
Color 340MB HD 50MHz NCV45Ø1541 .. 4,899
Color 340MB HD DX4/75 5,199

TEXAS INSTRUMENTS

E-Series
200MB HD DX2/40 Color.... 2,399
200MB HD DX2/50 Color.... 2,729
200MB HD DX2/50 Active Color.... 3,299
340MB HD DX4/75 Active Color.... 3,999
455MB HD DX4/75 Active Color.... 4,999

M-Series Multimedia
120MB HD SX/25 Mono....1,999
120MB HD SX/25 Color 2,349
200MB HD SX/25 Active Color.... 3,179
340MB HD DX4/75 Active Color.... 4,899
Portable CD-ROM Docking Station.... 779

TOSHIBA

T1910
486SX-33MHz, 4MB RAM/Exp. to 20MB PCMCIA Slot.
200MB Monochrome.... $1,489
200MB Color Dual Scan.... 2,039

T1950
486DX2-40MHz, 4MB RAM/Exp. to 20MB PCMCIA Slot
200MB, Color Dual Scan.... $2,679
200MB, Color, Active 2,929
320MB, Color, Active.... 3,179

T3400 Portege
120MB Active Color.... $3,349
120MB Active Color.... 1,899

T4700
200MB Color Dual Scan 3,159
320MB Dual Color Scan. 3,399
200MB Active Color.... 4,799
200MB Active Color.... 4,579

"SIMPLY THE LOWEST PRICES"

SEE OUR MAIN AD IN THIS ISSUE — 20,000 PRODUCTS, 24 HOURS A DAY

FREE Insight Catalog.

The Insight catalog is your Super Direct™ source for computers, hardware and software.

Insight®

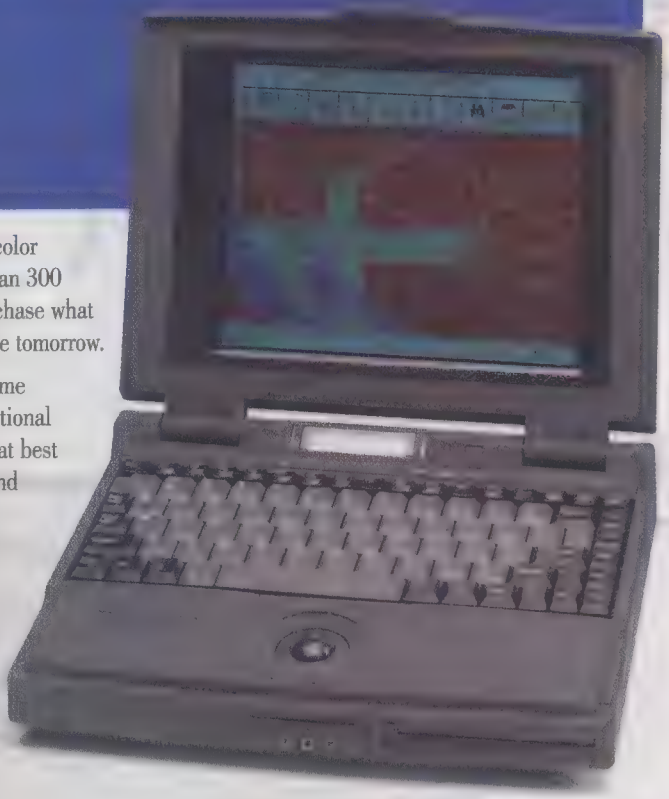
Your Direct Source
800-927-9921

National Accounts - 800-927-2907
Corporate Fax - 602-902-1191
Government Fax - 602-902-1126
Educational Fax - 602-902-1177

Price and availability subject to change without notice Worry-Free Guarantee and 1-year warranty may have some restrictions. Shipping is not refundable. All trademarks are the property of their respective owners. Photos may not represent actual product. The following products are subject to a 15% restocking fee when returned to Insight Direct for a refund: non-Insight computers, notebooks and printers. All warranties will be handled by the manufacturer on above products. Manufacturer warranty after 30 days. Software will not be accepted for a refund when the shrink wrap is broken. © Insight Direct, Inc 7/94

Circle 103 on reader service card.

Imagine the Possibilities



Processor power, mass storage, RAM memory, monochrome and color displays — with the *new* **Virage** notebook you can build more than 300 notebook configurations. Virage's modular design means you purchase what you need today, then upgrade your notebook as your needs change tomorrow.

Available in TFT Active Matrix, Dual Scan Passive, or monochrome 9.5 LCD displays, with powerful CPU's, larger mass storage, additional memory, you make the Virage just what you want. You decide what best suits your needs. The Virage also offers built in digital audio sound and PCMCIA type III support.

On the road presentations and home office communication were never this easy. **Virage**, the notebook computer that gives you over 300 reasons to buy one! or two, or three, or four...

(800)356-9990

altima

©1994 Altima Systems, Inc. • 1900 W. Lone Pass Road, Concord, CA 94520 • Tel 510/356-5600 Fax 510/356-2408

Imagination. Innovation. Insight.

ISBN: 094-7
Price: $22.95

ISBN: 129-3
Price: $24.95

ISBN: 146-3
Price: $24.95

ISBN: 133-1
Price: $24.95

ISBN: 155-2
Price: $22.95

ISBN: 166-8
Price: $15.95

No other books bring computer technology to life like the *How It Works* series from Ziff-Davis Press. Lavish, full-color illustrations and lucid text from some of the world's top computer commentators make *How It Works* books an exciting way to explore the inner workings of PC technology.

Available at all fine bookstores or call 1-800-688-0448, Ext.195.

© 1993 Ziff-Davis Press

ZIFF-DAVIS ZD PRESS

2X/3X Speed MultiMedia.

December 7, 1993
Comtrade Professional 66

January, April 1994
Comtrade VL-Bus BestBuy 66

True-to-Life DSP Sound.

MultiMedia Home PC

- Hottest 486 VL-Bus Home Entertainment System
- **Double-Speed CD-ROM Multi-Session Drive**
- **MediaMagic 16-bit Stereo Sound Card**
- **2 Speakers & 4 CD Titles**
- **4MB** RAM & **128K** Cache SRAM
- One Floppy Drive (3.5" or 5.25")
- VESA Local Bus IDE Hard Disk Controller
- **210MB** 12ms IDE Drive with 64K Cache
- 32-Bit VL-Bus **ThunderPro (1MB)** Graphics Accelerator (Up to 1280x1024 & up to 16.7 million Colors)
- 14" Non-interlaced .28mm 1024x768 SVGA Monitor **(Not just SVGA but Non-interlaced)**
- 2 Serial, 1 Parallel & 1 Game Ports
- Enhanced 101-key Keyboard
- Hi-Resolution 400 DPI Serial Mouse
- **9600/2400 FaxModem with Fax Software**
- Anti-Virus MS-DOS 6.2 & Windows 3.11

486/33 SX	$1475
486/33 DX	$1575
486/66 DX2	$1625
Pentium/66	$2225

- 15" Flat Screen Non-Interlaced Monitor Add $85
- Upgrade to Larger 425MB Drive Add $95
- Upgrade to Faster **14400 Baud FaxModem** Add $75

MultiMedia Dream Machine

- Hottest 486 VL-Bus or 64-Bit **Pentium™** PCI System
- **Triple-Speed CD-ROM (NEC-510) 195ms Drive**
- **MediaVision ProAudio Spectrum 16 Sound Card**
- **2 Amplified Stereo Hi-Fi Speakers & 4 CD Titles**
- **8MB** RAM & **256K** Cache SRAM
- One Floppy Drive (3.5" or 5.25")
- VESA Local Bus / PCI IDE Hard Disk Controller
- **540MB** 9ms IDE Drive with 256K Cache
- 64-Bit VLB / PCI **Diamond SpeedStar 64** Accelerator w. 1MB (Up to 1280x1024 & up to 16.7 million Colors) **(Up to 66 Million WinMark 3.11)**
- 15" Flat Screen .28mm Non-interlaced Color Monitor **(36% larger edge to edge display)**
- 2 Serial, 1 Parallel & 1 Game Ports
- Enhanced 101-key Keyboard
- Hi-Resolution 400 DPI Serial Mouse
- Anti-Virus MS-DOS 6.2 & Windows 3.11

486/66 DX2	$2295
Pentium/60	$2795
Pentium/66	$2895
Pentium/90	$3195

- 540MB / 1080MB SCSI-2 Drive Add $100 / $500
- 17" Flat Screen 1280x1024 Monitor Add $320
- 14400 Baud FaxModem with Software Add $120

MultiMedia Best Buy

- Hottest 486 VL-Bus or 64-Bit **Pentium™** PCI System
- **Double-Speed CD-ROM Multi-Session Drive**
- **MediaMagic 16-bit Stereo Sound Card**
- **2 Amplified Stereo Hi-Fi Speakers & 4 CD Titles**
- **8MB** RAM & **256K** Cache SRAM
- One Floppy Drive (3.5" or 5.25")
- VESA Local Bus / PCI IDE Hard Disk Controller
- **425MB** 12ms IDE Drive with 128K Cache
- VL-Bus / PCI **ThunderPro (1MB)** Graphics Accelerator (Up to 1280x1024 & up to 16.7 million Colors) **(Up to 38 Million WinMark 3.11)**
- 15" Flat Screen .28mm Non-interlaced Color Monitor **(36% larger edge to edge display)**
- 2 Serial, 1 Parallel & 1 Game Ports
- Enhanced 101-key Keyboard
- Hi-Resolution 400 DPI Serial Mouse
- Anti-Virus MS-DOS 6.2 & Windows 3.11

486/66 DX2	$1925
Pentium/60	$2425
Pentium/66	$2525
Pentium/90	$2795

- 14400 Baud FaxModem with Software Add $120
- Diamond **SpeedStar 64** 1MB for 64 bit Performance Add $100
- 250MB Archive Tape Backup Add $160

Orchid GameWave 32: True DSP Sound

This card includes all the MediaMagic 16 or the ProAudio Spectrum 16 features. In addition, it also has a 20MIPS DSP (digital signal processor), built-in General MIDI, and Roland MT-32 MIDI to support the 2MB on board Wavetable (which contains over 200 recorded instruments for true-to-life sounds).

Upgrade from MediaMagic16 Add $50

intel inside

ANY 486
VL BUS TO PCI ADD $90

1.800.969.2123

COMTRADE
"Where Quality is Everything"

15314 East Valley Blvd ▪ City of Industry, CA 91746 ▪ Fax: (818) 369-1479 ▪ Mon-Fri: 7AM-7PM. Sat: 9AM-6PM **International (818) 961-6688** Prices do not include shipping. Shipping and opened software are not refundable. One Year Warranty on Parts and Labor. The Intel Inside Logo, Pentium, and OverDrive are trademarks of Intel Corporation.

Circle 147 on reader service card.

GEE, FIVE?

- Fax
- Printer
- Copier
- PC Fax Modem
- Scanner

G5

Introducing the Multifunctional G5 from

DANKA OMNIFAX
A Danka Company

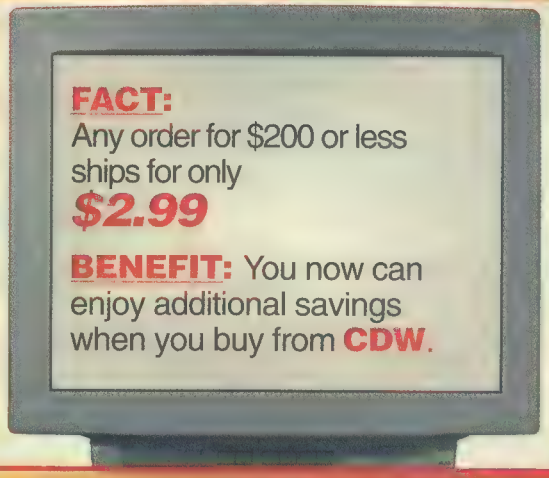
Gee, five functions in a single unit with a footprint the size of a sheet of letterhead! The days of cluttered desktops are over. No more miles of wire spread across the room linking your electronic universe. No longer will you need separate equipment to fax, print, copy, PC fax and scan. The new G5 from Omnifax does it all. Imagine printing out a document from your PC while simultaneously receiving an incoming fax, and queuing a fax for sending.

It's here and it's affordable. It's the G5 from Omnifax. For more information call 1-800-221-8330.

Circle 132 on reader service card.

COMPUTER DISCOUNT WAREHOUSE™

ANOTHER FACT ABOUT COMPUTER DISCOUNT WAREHOUSE™



FACT: Any order for $200 or less ships for only **$2.99**

BENEFIT: You now can enjoy additional savings when you buy from **CDW**.

WHY PAY RETAIL? CDW® SELLS SOFTWARE FOR LESS!

ADOBE ILLUSTRATOR V4 0 WIN	442 38
ADOBE PHOTOSHOP V2 5 1 WIN	552 45
ALDUS PAGEMAKER V5 0 WIN	554 66
ALDUS PAGEMAKER V5 0 WIN UPG	131 67
ARES FONTWORKSHOP WIN	146 80
ATI MEDIA MERGE V1 0	209 84
AUTODESK AUTOSKETCH WIN V2 0	177 09
LUCASARTS REBEL ASSAULT	46 15

MICROSOFT Windows V3.11
ONLY
$89.50
38843

BERKELEY AFTER DARK WIN	29 01
BERKELEY DISNEY SCRN SVR WIN	29 40
BITSTREAM FACELIFT FOR WP V2 0	59 09
BORLAND C++ V4 0	329 33
BORLAND DBASE IV V2 0 DOS	519 79
BORLAND DBASE IV V2 0 DOS LIC	279 82
BORLAND DBASE IV V2 0 DOS UPG	91 34
BORLAND PARADOX V4 5 DOS	524 30
BORLAND PARADOX V4 5 DOS UPG	134 82
BORLAND PARADOX V4 5 WIN	134 46
BORLAND TURBO C++ V3 0	95 04
BORLAND TURBO C++ VISUAL ED WIN	73 76
BORLAND TURBO PASCAL V7 0 DOS	96 95
QUATTRO PRO V5 0 DOS	39 95
QUATTRO PRO V5 0 WIN	39 95
Broderbund AUTOMAP WIN	47 44
Broderbund PRINTSHOP DLX V1 2 WIN	48 29
CAERE OMNIPAGE PRO V5 0 WIN	442 39
CEN POINT BACKUP V2 0 WIN	88 16
CEN POINT PC TOOLS V2 0 WIN	88 67
CEN POINT PC TOOLS V9 0 DOS	88 49
CEN POINT PCTOOLS V2 1 WIN UPG	49 49
CALERA WORDSCAN PLUS V2 0b WIN	392 37
CA CLIPPER V5 2 COMP UPG	122 75
Corel Draw UPG V3 0 TO V5 0	394 58
Corel Draw UPG V3 0 TO V5 0 CD Only	308 18
Corel Draw UPG V4 0 TO V5 0	177 08
Corel Draw UPG V4 0 TO V5 0	218 28
Corel Draw V3 0 WITH CD	128 33
Corel Draw V4 0 WITH CD	363 47
Corel Draw V5 0 CD & 3 5"	569.20
Corel Draw V5 0 CD ONLY	444 16
COREL SCSI V2 0	82 78
CLARIS FILEMAKER PRO WIN V2 1	116 83
CLARIS WORKS WIN	92 93
DAC EASY INSTANT ROLODEX WIN	34 01
DIAGSOFT QA PLUS WIN	83 69
DCA CROSSTALK V2 1 WIN	95 91
DELRINA COMM SUITE WIN	108 35
DELRINA PERFORM PRO PLUS V1 0	234 57
DELRINA WIN FAX PRO NETWORK	242 22
DELRINA WINFAX PRO V4 0	79 92
DENEBA CANVAS V1 0 WIN	255 35
DENEBA CANVAS V1 0 WIN UPG	91 06
DELORME MAPEXPERT WIN	248 39
XTREE GOLD V3 0 DOS	93 80
GENERIC CADD V6 1 DOS	279 38
HAYES SMARTCOM WIN	41 76
HELIX NETROOM 1 USER	59 03
IBM DOS V6 1 UPG	64 34
IBM OS/2 for Windows V2 1	39 55
IBM OS/2 V2 1	145 07
IBM OS/2 V2 1 UPG	126 58

INSET SYSTEMS HJAAK PRO V2 0	79.69
INTUIT QUICKBOOK/QUICKPAY V2 0	125 64
INTUIT QUICKBOOKS V2 0 WIN	95 00
INTUIT QUICKEN DELUXE WIN CD-ROM	61 88
INTUIT QUICKEN V3 0 WIN	43 54
INTUIT QUICKEN V7 0 DOS	44 47
KODAK PHOTO CD ACCESS+ WIN	37 45
KODAK PHOTOEDGE STARTER KIT	89 20
LASERTOOLS PRINT CACHE	47 16
CC MAIL 10 USER PACK	224 18
Lotus 1 2 3 V4 01 MULTIMEDIA ED	303 57
Lotus 1 2 3 V4 01 MULTIMEDIA ED UPG	98 42
Lotus 1 2 3 V4 01 + ORGANIZER UPG WIN	108 13
Lotus 1-2-3 V4 01 + ORGANIZER WIN	344 37
Lotus 1-2-3 2 4 UPG KIT	95 10
Lotus 1-2-3 V2 4	321 54
Lotus 1-2-3 V2 4 NODE	298 84
Lotus 1 2 3 V3 4A SERVER	393 42
Lotus 1 2 3 V4 01 WIN	293 07
Lotus 1 2 3 V4 01 WIN LIC	235 87
Lotus 1-2-3 V4 01 WIN UPG	94 64
Lotus AMI PRO SUPERBUNDLE	226 70
Lotus AMI PRO V3 01 VER/COMP UPG	95 91
Lotus AMI PRO V3 01 WIN	249.34
Lotus APPROACH V2 1 WIN	94 78
Lotus FREELANCE V2 01 WIN	331 11
Lotus FREELANCE V2 01 WIN UPG	94 08
Lotus IMPROV V2 1 WIN	96 48
Lotus NOTES V3 0 STARTER PK	809 92
Lotus ORGANIZER V1 1 WIN	91.34
Lotus SCREENCAM V1.0 WIN	53 53

MICROSOFT Workgroups for Windows
ONLY
$46.28
39143

Lotus SMARTSUITE V2 1 WIN	446 39
Lotus SMARTSUITE V2 1 WIN UPG	279 27
Lotus V3 4A JPG	95 44
MATHSOFT MATHCAD V5 0 WIN	89 86
MICROCOM CARBON COPY PLUS V6 1	124 95
MICROCOM CARBON COPY WIN	129 53
MEDIA VISION CRITICAL PATH CD	45.07
MEDIA VISION PLANET ADRENALINE CD	36.78
PROCOMM PLUS V2 01 DOS	67 60
PROCOMM PLUS WIN	93 17
MICROGRAFX ABC FLOWCHRT WIN	288 16
MICROGRAFX DRAW V1 0 WIN	48.11
THE JIN NSTALLER V2 0 WIN	39 20
MS ACCESS V2 0 DEVELOPER WIN	312.63
MS ACCESS V2 0 UPG WIN	115 16
MS ACCESS V2 0 WIN	301 85
MS ARCADE WIN	28 18
MS BOOKSHELF CD	117 73
MS CINEMANIA 1994 CD	52.38
MS CREATIVE WRITER WIN	35.46
MS DINOSAURS CD	52 86
MS DOS V6 21 UPG 3PK	114 54
MS ENCARTA 1994 CD	83 34
MS EXCEL V5 0 WIN	295.28
MS EXCEL V5 0 WIN COMP UPG	115 01
MS EXCEL V5 0 WIN VERS UPG	89.47
MS FLIGHT SIMULATOR V5 0 DOS	43.12
MS FORTRAN V5 1	145 07
MS FOXPRO PRO V2 6 WIN	437 25
MS FOXPRO V2 6 DIST KIT	24 07

WordPerfect V6.0a for Windows
Ver/Comp. Upgrade
ONLY
$69.00
41608

MS FOXPRO V2 6 DOS	91 34
MS FOXPRO V2 6 LICENSE WIN	78.79
MS FOXPRO V2 6 UPG WIN	26 31
MS GOLF WIN	43.62
MS MULTIMEDIA BEETHOVEN CD	52.85
MS MULTIMEDIA GOLF WIN CD	42 93
MS MUSICAL INSTRUMENTS CD	52 86
MS OFFICE PRO V4 0 WIN	543 55
MS OFFICE V4 2 WIN	449 49
MS OFFICE V4 2 WIN UPG	268 14
MS POWERPOINT V4 0 WIN	299 84
MS POWERPOINT V4 0 WIN COMP UPG	117.17
MS PROFIT V1 0 WIN	118 84
MS PROJECT V3 0 WIN	411 26
MS PROJECT V4 0 WIN VERS UPG	135 02
MS PUBLISHER V2 0 WIN	85 51
MS VISUAL BASIC COMP UPG	179 02
MS VISUAL BASIC PRO V3 0 WIN	91 51
MS VISUAL BASIC V3 0 WIN	119 74
MS VISUAL BASIC V3 0 WIN	295.28
MS VISUAL C++ PRO V1 5 CD	366 46
MS VISUAL C++ V1 0 WIN	74 79
MS VISUAL C++ WINDOWS NT	674 14
MS WIN PRINTING SYSTEMS	91 34
MS WIN WORKGROUPS V3 11 LIC	123 75
MS WINDOWS NT V3 1	294 84
MS WINDOWS NT V3 1 ADV SRV	872 66
MS WINDOWS NT V3 1 ADV SRV UPG	533 00
MS WINDOWS NT V3 1 UPG	262 58
MS WINDOWS SND SYS V2 0 SW	52 86
MS WINDOWS V3 11	89 50
MS WINDOWS V3 11 LIC	79 64
MS WINDOWS V3 11 UPG	49 97
MS WORD V6 0 DOS	302 52
MS WORD V6 0 DOS VERS UPG	91 78
MS WORD V6 0 WIN	295 96
MS WORD V6 0 WIN COMP UPG	116 93
MS WORD V6 0 WIN VERS UPG	89 48

Microsoft DOS V6.2 Upgrade for Dummies
ONLY
$48.92
39055

MS WORKS V3 0 DOS	91 62
MS WORKS V3 0 WIN	85 63
MS WRKGRP/WIN ADD ON V3 11	46 28
MS-DOS V6 2 STEP UP	9 95
MS-DOS V6 2 UPG	48 92
MOON VALLEY ICON HEAR-IT	12 06
MOON VALLEY ROMATERIAL CD	19 16
NORTON CLOSE-UP HOST & REMOTE	114 75

OCEAN REACHOUT PRO V4 0 VIEWER	63 94
PACIFIC MICRO MAC IN DOS	56 02
PEACHTREE ACCT V2 0 WIN	104 67
ECL PSE FAX WITH OCR WIN	49 00
QUALITAS 386 MAX V7 0	58 22
QUARTERDECK DESQVIEW 386 V2 6	91 29
QUARTERDECK QEMM V7 0 1	59 38
QUARTERDECK QEMM V7 01 + GAMES	66 10
QUARTERDECK QEMM V7 01 UPG	39.58
QUARKXPRESS V3 12 WIN	548 16
SPC HARVARD GRAPHICS V2 0 WIN	247 00
SPC HARVARD GRAPHICS V2 0 WIN UPG	78 97
SPC HARVARD GRAPHICS V3 06 DOS	366 79
SABER LAN WRKSTN V2 0	113 04
SABER LAN WRKSTN V2 0 NODE	28 79
SHAPEWARE VISIO V2 0 WIN	116 05
SOLID OAK DISK HISTORIAN WIN	67 36
Spinnaker CALENDAR CREATOR V2 0 WIN	38.96
STACKER V4 0 SPECIAL DOS V6 0	51 15
STACKER V4 0 WIN DOS	91 91
NORTON DESKTOP V3 0 WIN	113 03
SYM NORTON BACKUP V3 0 WIN	94 12
SYM Norton Utilities V8 0 DOS/WIN	107 23
Symantec ACT V2 0 WIN	169 40
Symantec ACT V2 1DOS	247 16
Symantec ANTI VIRUS V3 0	79 70
Symantec DIRECT ACCESS V1 0 WIN	62 84
Symantec DIRECT ACCESS V5 1 DOS	63 38
Symantec PC ANYWHERE V1 0 WIN	123 30
Symantec PC ANYWHERE V5 0 DOS	109 73
Symantec PC ANYWHERE V5 0 REMOTE	81 64
Symantec Q&A 4 0 DOS	243 66
Symantec Q&A V4 0 COMP UPG WIN	91 57
Symantec Q&A V4 0 WIN	155 28

LOTUS 1-2-3 V4.01 for Windows
Version Upgrade
ONLY
$94.64
32690

Symantec SAFE V2 1 DOS/WIN	183 85
TOUCHSTONE CHECK IT PRO SET	82 42
TOUCHSTONE CHECKIT PLUS V3 0	79 24
Traveling SOFTWARE LAPLINK V	85 21
Traveling SW Commworks WIN SPC UPG	59 40
VIRGIN 7TH GUEST CD	51 15
Borland Office V2 0 WIN	361 03
Borland Office V2 0 WIN COMP UPG	266 13
Borland Office V2 0 WIN VERS UPG	223 63
Wordperfect Grammatik V5 1 Win	59 71
Wordperfect InfoCentral V1 0 WIN	89 06
Wordperfect V5 1+ DOS	312 63
Wordperfect V6 0 DOS	275 37
Wordperfect V6 0 DOS COMP UPG	113 04
Wordperfect V6 0 DOS LICENSE	168 73
Wordperfect V6 0 DOS UPG	78 21
Wordperfect V6 0 W/QUATTRO PRO	296 73
Wordperfect V6 0 WIN	279 38
Wordperfect V6 0 WIN LICENSE	168 23
Wordperfect V6 0a WIN VER/Comp UPG	69 00
Wordperfect V6 0 WIN W Quattro Comp UPG	131 00
Wordperfect V6 0A WIN	208 80
Wordperfect V6 0B DOS VER/Comp UPG	111 22
WordPerfect Works	92 83
WP Presentations V2 0 WIN + SCANMAN	126 89
WP V6 0 WIN W/QUATTRO VER UPG	114 49
WALL DATA RUMBA V2 0 AS 400 WIN	264 70

CDW® HOURS
(800)383-4239

CDW

PCC974

WE SELL NAME BRAND ITEMS FOR LESS!

(800) 886-4CDW

FAX (708) 465-6800

NASDAQ
CDW® is a NASDAQ traded company
TICKER SYMBOL CDWC
D & B Rated 4A1 Duns 10-762-7952

Turn the Page For More CDW® Savings.

No Surcharge For Credit Cards

High Volume Bids Invited

©1994 CDW® Computer Centers Inc

Circle 130 on reader service card.

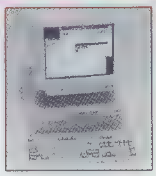
COMPUTER DISCOUNT WAREHOUSE™

COMPUTER DISCOUNT WAREHOUSE™

CDW

COMPUTER DISCOUNT WAREHOUSE™

AST Bravo LC 486SX/33



◆ i486SX33 CPU ◆ 170MB hard drive ◆ 4MB RAM ◆ 3 ISA expansion slots, 1 VLB expansion slot ◆ Local bus video ◆ 1024x768 @ 72Hz max res ◆ MS DOS 6.x, Windows 3.1, mouse & mouse pad included ◆ One year on-site warranty

ONLY! **$1126.07** CDW 39553

monitor not included

WHY PAY RETAIL?

CDW® Sells For Less

Canon Innova

◆ i486SX/33 CPU ◆ 170MB hard drive ◆ 4MB RAM expandable to 68MB ◆ Energy Star ◆ VESA local bus graphics ◆ 1MB video RAM ◆ 4 16-bit expansion slots ◆ 3.5" floppy ◆ MS DOS 6.x, Windows 3.1 & MS Works for windows included ◆ One year on-site warranty

ONLY! **$1025.71** CDW 32811

monitor not included

HARDWARE, SOFTWARE & PERIPHERALS AT DISCOUNT PRICES

NETWORKING PRODUCTS

NOVELL

Netware V4.01

5 USER CD	776.57
10 USER CD	1765 90
25 USER CD	2588 41
50 USER CD	3461.67

Netware V3.12

5 USER 3 5"	577 73
10 USER 3 5"	1297 55
25 USER 3 5"	1898 00
50 USER 3 5"	2578 00
100 USER 3 5"	3698.00

Call for Pricing on NetWare CD-ROM [illegible]

PERSONAL NETWARE V1.0 NEW

1 USER	59 88
5 USER	265 52

[illegible]

COACTIVE

COACTIVE STARTER KIT	189.99
COACTIVE ADD-ON KIT	139 89

THOMAS-CONRAD

TC5143 Ethernet COAX	119 87
TC5143 Ethernet COAX 6PK	667 25
TC5143 Ethernet 10BT	89 95
TC5143 Ethernet 10BT 6PK	469 88
TC6242 Arcnet 8 BIT COAX CARD	66 86
TC6245 Arcnet COAX CARD	179 99
TC6242 Arcnet+ TP CARD	95 94
TC6040 Arcnet Passive 4 Port Hub Coax	39 50
TC5055 Ethernet 8 PORT CON 10BT	339 47
TC4045 TOKEN RING 16.4 CARD	309 33

CDW Carries the Complete Line of TCNS Products. Call for Details

ARTISOFT

NODERUNNER 2000A	215 58
NODERUNNER 2000T	169 05
NODERUNNER 2000C	169 05
NODERUNNER S 2000A	99 62
NODERUNNER S 2000T	84 43
NODERUNNER/SI 2000C	84 43
Lantastic V6 0	79 50
Lantastic V6 0 5 user	322 90
Lantastic V6 0 Starter Kit	334 31
CENTRAL STATION II	389 13
10BT 5 PORT INTERNAL HUB	256 72
NODERUNNER STARTER KIT WINDOWS	479 29
SIMPLY LANTASTIC START KIT N	193 67
SIMPLY LANTASTIC V1 0	54.89
T RUNNER 8 PORT 10BT	299.88
T RUNNER 12 PORT 10BT	488.41

SMC®

ULTRA16 Ethernet COAX	105 25
ULTRA16 COAX 6PK	576 75
ULTRA16 COAX 24PK	2206 96
ULTRA16 Ethernet 10BT	105 25
ULTRA16 10BT 6PK	578 54
ULTRA16 10BT 24PK	2089 97
ULTRA16 Ethernet COMBO	119 35
ULTRA16 COMBO 6PK	669 21
ULTRA16 COMBO 24PK	2529 70
ETHERCARD+ ELITE COAX	119 64
ETHERCARD+ ELITE COAX 6PK	628 73
ETHERCARD+ ELITE MCA COAX	189 26
ETHERCARD+ ELITE 10BT	119 12
ETHERCARD+ ELITE 10BT 6PK	619 22
ETHERCARD+ ELITE MCA 10BT	189 55
ETHERCARD+ ELITE EISA 10BT	579 78
ETHERCARD+ ELITE COMBO	139 57
ETHERCARD+ ELITE COMBO 6PK	753 59
3608 Ethernet 8 PORT CON 10BT	329 61
3512 Ethernet 12+2 PORT CON 10BT	611 76
PC600WS Arcnet CARD COAX	119 93
PC600WS Arcnet CARD TP	119 88
PC600FS Arcnet CARD COAX	199 29
PC 130 Arcnet CARD COAX	68 50
Arcnet 8 PORT ACTIVE HUB COAX	229 41
TOKENCARD ELITE 16.4	249 88

3Com®

3C503 ETHERLINK II COAX	159 44
3C509 ETHERLINK III COAX	115 50
3C509 ETHERLINK III COAX 5 PK	529 12
3C509 ETHERLINK III 10BT	115 50
3C509 ETHERLINK III 10BT 5 PK	527 97
3C509 ETHERLINK III COMBO	135 88
3C509 ETHERLINK III COMBO 5 PK	545 23
3C579 ETHERLINK EISA COAX	229 91
3C579 ETHERLINK EISA 10BT	229 91
3C1627 12 PORT LINKBUILDER 10BT	638 95
3C589 Etherlink III PCMCIA Combo ENET	301 42

NETWORKING PRODUCTS

OTHER TOP-QUALITY NAME BRANDS

EAGLE NE2000+ COAX	99 80
EAGLE NE2000+ 10BT	94 80
EAGLE NE3200 THIN COAX w/TPA	478 34
NATIONAL SEM NE2000+ COAX	89 51
NATIONAL SEMI NE2000+ 10BT	84 59

If You Don't See What You Are Looking For Call CDW. Carries the Best Networking Selection in the Industry!

Xircom

PE310BC POCKET Ethernet COAX	309 89
PE310B2 POCKET Ethernet COAX	267 80
PE310BT POCKET Ethernet 10BT	268 31
PA202B6 POCKET Arcnet COAX	229 30
POCKET TOKEN RING III	455 89
PPX03 PARALLEL PORT MULTIPLEXOR	77 80
XIRCOM 14 4K POCKET MODEM	505.91

IBM TOKEN RING

IBM TOKEN RING 16/4 ISA	429 68
IBM TOKEN RING 16.4 MCA	489 56
IBM TOKEN RING MAU	458 88

intel

ETHEREXPRESS 16 COAX	99 33
ETHEREXPRESS 16 COAX 5PK	454 13
ETHEREXPRESS 16 COAX 20PK	1698 38
ETHEREXPRESS MCA COAX	166 52
ETHEREXPRESS 16 10BT	99 33
ETHEREXPRESS 16 10BT 5 PK	454 13
ETHEREXPRESS 16 10BT 20PK	1698 38
ETHEREXPRESS MCA 10BT	166 52
ETHEREXPRESS 16 COMBO	116 77
ETHEREXPRESS 16 COMBO 5PK	545 09
ETHEREXPRESS 16 COMBO 20PK	2036 93
ETHEREXPRESS FLASH 10BT	111.88
ETHEREXPRESS FLASH 10BT 5PK	515 62
ETHEREXPRESS FLASH COMBO	129.79
ETHEREXPRESS FLASH COMBO 5 PK	599 00
ETHEREXPRESS EISA COAX	409.88
TOKENEXPRESS 16/4	349 94
NETPORT II COAX	368 85
NETPORT II 10BT	368 85
ETHEREXPRESS ISA HUB	519 93
ETHEREXPRESS ISA HUB EXP	449 96

TAPE, REMOVABLE & FLOPPY DRIVES

COLORADO MEMORY SYSTEMS INC.

JUMBO 120MB INTERNAL	99.80
JUMBO 250MB INTERNAL	167 34
TRAKKER 120MB PARALLEL PORT	199.45
TRAKKER 250MB PARALLEL PORT	324.84
POWERTAPE 2 4GB SCSI INTERNAL	946 91
POWERTAPE 2 4GB SCSI EXTERNAL	1087 99
POWERDAT 4GB SCSI INTERNAL	1153.99

IOMEGA

TAPE 250MB INTERNAL	169 57
TAPE 250 INTERNAL PLUS	185 13
FLOPT CAL 21MB INSIDER	379 27
BERNOULLI 90MB PC POWERED PRO	298 49
BERNOULLI 150MB INSIDER SCSI	479 11
BERNOULLI 150MB INSIDER IDE	469 59
BERNOULLI 150MB PC POWERED	494 76
BERNOULLI 150MB TRANSPORTABLE	568 26
90MB CARTRIDGE	89 27
150MB CARTRIDGE	92:80

MICROSOLUTIONS

Backpack 3 5" 1 44MB Floppy Parallel	159.89
Backpack 5 25" 1 2MB Floppy Parallel	166.25
Backpack 200MB HD Parallel	399 00
Backpack 2X CD-ROM Parallel	377 44
Backpack 250MB TAPE B-U Parallel	355 05

SyDOS

PRO NOTE 42MB Parallel	418 17
PUMA 88MB Parallel	442 44
88MB EXT W 16 BIT ADAPTER	549 44
PUMA 105MB Parallel	514 94
MARLIN 105MB INT IDE	478 26

TAPE, REMOVABLE & FLOPPY DRIVES

Mountain.

TD-250 250MB INT IDE	189 32
FS8500 305MB INT IDE	449 50
SIDECAR II 305MB Parallel TBU	358 77
1200-4 4GB EXT SCSI	2045 39
750MB-1 5GB INT TBU W.ADPT	1036 19
750MB 1 5GB EXT TBU W.ADPT	1254 69

WYSE TERMINALS

WYSE 30 AMBER OR GREEN	272 89
WYSE 50 AMBER OR GREEN	355 50
WYSE 55 AMBER GREEN, WHITE	219 22
WYSE 60 AMBER GREEN, WHITE	279 60
WYSE 150 AMBER, GREEN, WHITE	265 45
WYSE 160 AMBER, GREEN, WHITE	329 88
WYSE 325 COLOR	427 40

MULTIMEDIA, SOUND, CD

ALTEC LANSING ACS300 SPKRS/SW	239 69
Beethoven Int MM Explorer Kit w 16 bit sound	329 88
Beethoven Int MM Intro Kit	183 48
CDW 4 CD EDUTAINMENT BUNDLE*	65 16
CDW 5 CD BUNDLE*	119 97
CDW 5 CD BUSINESS BUNDLE*	109 61
CDW 5 CD ENTERTAINMENT BUNDLE*	79 33
Creative LABS DigitalEdge MM Kit	627 17
Creative LABS DISCOVERY 16 INT	328 88
Creative LABS SB 16 AWE32	289 22
Creative Soundblaster PRO Value Edition	85 84
Creative LABS SB 16 SCSI	177 90
Creative SB 16 ASP MCD	175 67
DIAMOND SONIC SOUND BASIC	224 58
DIAMOND SONIC SOUND LX	109 30
Media Vision CRITICAL PATH	44 53
Media Vision MEMPHIS SYS	518 75
Media Vision PRO 16 System II Bundle	489 88
Media Vision PRO AUDIO 16 BASIC	79 51
Media Vision PRO AUDIO SPECT 16	98 18
Media Vision PRO AUDIO STUDIO 16	124 02
MICROSOFT BOOKSHELF CD	119 89
MICROSOFT CINEMANIA 1994	52 88
MICROSOFT WIN SND SYS V2 0	52 95
MS ENCARTA 1994	85 24
MS MULTIMEDIA BEETHOVEN	52 88
MS WIN SND SYS V2 0 W/BOARD	138 10
ORCHID GAMEWAVE 32	138 40
ORCHID SOUNDWAVE 32	192 10
PROCOM EXT MULTIMEDIA STATION	789 46
PROCOM INT MULTIMEDIA STATION	739 16
SIGMA DESIGNS REELMAGIC LITE	291 30
SONIC SOUND PRO UPG KIT	98 45
SONY DSKTOP LIB EXT W SND 2X	479 54
SONY DSKTOP LIB INT W SND 2X	467 73
SONY DSKTOP LIBRARY INT 2X	234 10
TURTLE BEACH MONTEREY SND CRD	349 77
TURTLE BEACH MULTISOUND	427 88
VIDEO LOGIC 928MOVIE VLB 1MB	301 73

*AVAILABLE ONLY WITH CD-ROM DRIVE PURCHASE. CALL FOR DETAILS

CD-ROM & OPTICAL DRIVES

Beethoven 260ms Int CD ROM Kit	171 90
CHINON CDS535 INT CD-ROM KIT	347 60
CHINON CDX535 EXT CDROM KIT	427 88
NEC 3XE EXTERNAL	489 52
NEC 3XI INTERNAL	459 37
NEC 3Xp Portable	414 19
ORCHID CDS3110 INT	186 85
Pioneer DRM604X 6 DISC Quadraspin	1149 00
PLEXTOR 3028 240MS INT KIT	335 99
PLEXTOR 3028 W/PA SPECTRUM 16	431 89
PLEXTOR 5028 240MS EXT KIT	443 93
PLEXTOR 5028 W PA SPECTRUM 16	545 65
SONY CDU-33A Int 2X CD-ROM Kit	179 78
SONY CDU535 INT CD-ROM	271 72
SONY CDU561 INT SCSI 2X CD-ROM	289 83
SONY CDU7205N EXT CD-ROM	449 88
SYDOS Parallel PORT CD-ROM	289 49
Toshiba 3401 EXT SCSI 4 DRIVE TOWER	1997 18
Toshiba 3401 EXT SCSI CD-ROM	497 61
Toshiba 3401 EXT SCSI CD-ROM W/ADPT	599 95
Toshiba 3401 INT SCSI CD-ROM	349 22
Toshiba 3401 INT SCSI CD-ROM W/ADPT	497 58

PLOTTERS, DIGITIZERS & SCANNERS

KURTA

XLP 12 X 12 4 BUTTON & STYLUS	219 55
XGT 12X12 SER & ADB.	213 96
XLP 12 X 18 16 BUTTON	438 93

PLOTTERS, DIGITIZERS & SCANNERS

CalComp

DB III 12X12 4 BUTTON	248 90
DB III 12X12 16 BUTTON	248 90
DB III 12X18 W/PRES PEN	399 85
DB III 12X18 16 BUTTON CORDLESS	696 85
SLATE 12X12 W.PRES PEN	363 40
SLATE 12X12 W 16 BUTTON	239 91

Canon

IX4015 COLOR SCANNER	997 42

Summagraphics.

SUMMASKETCH III 12 X 12 16 BUTTON	253 90
SUMMASKETCH III 18 X 12 4 BUTTON	524 44

HOUSTON INSTRUMENT

HI 7100 A-D SIZE 8 PEN	2598 78
HI 7200 A-F SIZE 8 PEN	3387 22

HEWLETT PACKARD

HP SCANJET IIP	509 98
HP SCANJET IIP DOCUMENT FEEDER	269 93
HP SCANJET IICX W ISA	995 50
HP SCANJET IICX DOCUMENT FEEDER	474 72
IICX TRANSPARENCY ADAPT	633 26

EPSON

ACTIONSCANNER ES600C	796 86
ACTIONSCANNER ES800C	1065 00
ACTIONSCANNER ES800C PRO	1238 53

VIDEO PRODUCTS

VGA & SUPER VGA MONITORS

MAG INNOVISION MX15F	497 15
MAG INNOVISION DX15F	435 90
MAG INNOVISION MX17F	877 40
MAG INNOVISION MX17FG	927 53
MAG INNOVISION DX17F	698 00
MAGNAVOX CM2089 14" 28	255 89
MAGNAVOX CM2099 14" 28 NI	264 00
MAGNAVOX CM4017 17"	648.20
MAGNAVOX 20CM64 20" SPECIAL*	999.00
*while supplies last	
NANAO F340iW 15"	659 00
NANAO F550i 17"	969 00
NANAO F550 W 17"	1029.00
NEC 3V 15"	467 49
NEC 3FGE 15"	557 17
NEC 4FGE 15"	617 19
NEC 5FGE 17"	998 50
NEC 5FGp 17"	1097 21
NEC 6FGp 21"	1997.00
PANASONIC C1381i 14"	335 76
PHILIPS 1764DC 17"	719 50
PHILIPS BRILLIANCE 17"	995 00
PHILIPS BRILLIANCE 21"	2239 45
SONY CPD1730 17"	997 00
SONY 17SE 17"	1147 00
SONY GDM2038 20"	1999 84

VGA & SUPER VGA DISPLAY CARDS

ADS VGA TO TV ELITE	224 57
ATI Graphics Ultra+ 2MB	237 58
ATI Graphics Ultra Pro 2MB	284 22
ATI Graphics Ultra Pro 2MB EISA	394 92
ATI Graphics Ultra Pro 2MB VLB	284 25
Creative LABS VIDEO BLASTER	339 02
Creative LABS VIDEO SPIGOT	237 73
DIAMOND STEALTH 32 VLB 2MB	232 31
DIAMOND STEALTH PRO 1MB	234 36
DIAMOND STEALTH PRO 2MB	316 58
DIAMOND SPEEDSTAR PRO 1MB	107 43
DIAMOND VIPER VLB 2MB	349 23
HERCULES DYNAMITE VLB	157 30
Hercules Graphite Power ISA 1MB	246 37
Hercules Graphite Power 1280 ISA 2MB	363 12
INTEL SMART VIDEO RECORDER	486 88
ORCHID FAHRENHEIT 1280+	138 89
ORCHID FAHRENHEIT VA	169 90
ORCHID CELSIUS VLB 1MB	209 55
ORCHID CELSIUS VLB 2MB	249 94

If You Find a Better Price, Call CDW® Before You Buy (800) 886-4CDW

NASDAQ

BUY WITH CONFIDENCE CDW® IS A NASDAQ TRADED COMPANY

TICKER SYMBOL CDWC

D & B Rated 4A1

Duns 10-762 7952

No Surcharge For Credit Cards

VISA DISCOVER MasterCard CDW

Credit Card charges are not submitted until time of shipment. Freight is calculated as the carrier's actual freight charge plus insurance and packaging material. The cost of insurance is 0.35% (0.0035) of the order total. Packaging materials will not exceed $4.00 per 1 package order or $6.00 per multi-package shipment. For your protection we ship only to your verified billing address. Non-defective returns subject to restocking fee. Allow [illegible] business days for shipping when paying by personal check. Software, chips and other electronic components are not returnable. All pricing subject to change. ™ Trademarks of all companies listed in this ad.

CDW® HOURS

Sales 7:00 -9:00 CDT Mon-Fri.
9:00-5:00 CDT Sat.

Tech Support for Customers
8:00-7:00 CDT Mon-Fri.
9:00-5:00 CDT Sat.

MOST ORDERS SHIP THE SAME DAY

COMPUTER DISCOUNT WAREHOUSE™

CDW®

IBM

IBM ValuePoint Model 425SX/Si

✔ i486SX/25 CPU ✔ 120MB hard drive ✔ 4MB RAM upgradeable to 64MB ✔ 3 ISA slots ✔ (2) 3 5" bays ✔ (1) 5.25" bays ✔ 16 bit ISA data bus ✔ 4 SIMM sockets total (3 open) ✔ VESA local bus video ✔ 128K Flash Memory BIOS ✔ IBM PC DOS 6 1 & Windows 3.1 pre-loaded ✔ One year on-site warranty

ONLY! **$895.00** CDW 37727

monitor not included

WHY SETTLE FOR LESS?

CDW® SERVICES YOU BETTER

Packard Bell

Packard Bell i486SX/33 Desktop Computer

✔ 4MB RAM ✔ 210MB hard drive ✔ 3.5" floppy drive ✔ 3 ISA expansion slots ✔ 2400bps internal modem ✔ Local bus video ✔ One-year on-site warranty ✔ MS-DOS 6.X, Windows 3.1 ✔ monitor sold separately

ONLY! **$849.00** CDW 39150

monitor not included

CDW® CARRIES OVER 15,000 PRODUCTS. IF YOU DON'T SEE IT, CALL!

COMPUTERS

TOSHIBA

T1910CS 200MB	2104 99	T1950CT/320MB	3213 90
T1950CS 120MB	2198 69	T3400 120MB	1934 23
T1950CS/200MB	2305 14	T3400CT 120MB	3428 00
T1950CT/200MB	3041 66		
T4700CS 200MB DUAL CLR	3123 74		
T4700CS 320MB DUAL CLR	3369 38		
T4700CT 200MB ACT CLR	4499 00		
T4700CT 320MB ACT CLR	4849 00		
T4800CT 500MB ACT COL	5495 47		
T6600C 510MB ACT CLR	6099 00		
T6600C 510MB CD ACT CLR	6599 00		

AST BRAVO SERIES

LC 4/33S 170MB	1126 07	LC 4/66D 340MB CD	2334 60
LC 4/33S 270MB	1352 62		
LC 4/33D 170MB	1363 78	LC 4/100D 270MB	2212 16
LC 4/33D 270MB	1589 33	LC 4/100D 340MB	2599 29
LC 4/33D 210MB CD	1816 88	LC 4/100D 540MB	2499 99
		LP 4/66D 170MB	1679 26
LC 4/50S 170MB	1267 80	LP 4/66D 340MB	2129 88
LC 4/50S 270MB	1517 79	MT 4/66D 170MB	1774 71
LC 4/50S 210MB CD	1719 91	MT 4/66D 340MB	2222 02
		MT P60 270MB	2476 12
LC 4/66D 270MB	1858 18	MT P60 540MB CD	3301 87
LC 4/66D 540MB	2233 18		
NOTEBOOK 80MB Mono	1592 15		
NOTEBOOK 4/33S 200MB PASS Color	2267 73		

Canon

4/25 120MB Color	2769.58	NB 4/33S 170MB P/C	2129.37
4/25 200MB Color	3089.5	NB 4/33S 260MB Mono	1732.23
4/33 120MB Mono	1937 44	NB 4/33S 260MB Pas Col	2217.54
4/33 200MB Mono	2029.1		
4/33 200MB Pas Col	2507.29	4/33L SX 240MB	1025.71
4/50 130MB Pas Col	2846.81	4/50L 170MB	1329.55
4/50 260MB Pas Col	3014.4	4/50L 240MB	1408.96
NB 4/33S 120MB Mono	1569	4/66L 170MB	1538.57
NB 4/33 170MB Mono	1639.8	4/66L 240MB	1614.88

EPSON

ActionNote 4SLC50 120MB+modem	1442 05
ActionNote 4SLC50 180MB+modem	1534 75
ActionNote 500C 120MB+modem	1977 92
ActionNote 500C 180MB+modem	2063 91
ActionNote 700 120MB mono	1897 46
ActionNote 700C 120MB pas clr	2477 72
ActionNote 700C 210MB pas clr	2556.35
ActionNote 700C 260MB pas clr	2647 79
ActionNote 700CX 210MB act clr	3208 77

IBM

ThinkPad 500 4/50DX2 85MB	1599.00
ThinkPad 500 4 50DX2 170MB	1899.00

PS/ValuePoint Systems

4/25SX Si 120MB	895 00	4/33 MT 340MB	1829 00
4/25SX Si 212MB	995.00	4/50DX2 MT 212MB	1779 00
4/33DX Si 120MB	1259 00	4/50DX2 MT 420MB	2259 00
4/33DX Si 212MB	1389 00	4/66DX2 MT 340MB	2269 00
4/66DX2 Si 120MB	1659 00	4/66DX2 MT 527MB	2699 00
4/66DX2 Si 212MB	1759 00	Pentium 5/60 527MB	4079 00
4/33 MT 212MB	1679 00		

NEC

VERSA NOTEBOOKS

4/40 120MB Mono	2584 43	4/50 209MB Color	4427 34
4/40 120MB Color	3747 30	4/50 340MB Mono	3658 79
4/40 250MB Mono	2999 87	4/50 340MB Color	4797 59
4/40 250MB Color	4147 81	4/75 340MB Color	5138.10
4/50 209MB Mono	3258 00		
READY 4 25S 170MB Multimedia	1209 73		
READY 4/33S 210MB Multimedia	1458 26		
IMAGE 4 50 210MB	1719 00		
IMAGE 4 50 420MB	1807 48		
POWERMATE 4/33SX 170MB	1129 54		
POWERMATE 4 50DX2 210MB	1388 27		
POWERMATE 4 66DX2 210MB	1727 72		

PACKARD BELL

Diplomat 4 25 170MB mono	1969 60
Statesman 4 50DX2 200MB mono	1479 97
Statesman 4 50DX2 200MB color	2069 93
Force Multimedia 4/25 210MB	1158 36
Force Multimedia 4 33SX 340MB	1338 58
Force Multimedia 4 50DX2 420MB	1549 47
Force Multimedia 4 66DX2 420MB	1979 25
Force Multimedia 5/60 420MB	2405 05
Force 4 50SX2 340MB	1178 39
Force 4 66DX2 420MB	1549 47
Force MT 4/66DX2 420MB	1729 70

SHARP NOTEBOOKS

486/33 200MB PAS CLR W/TRKBALL	2294 31
486/33 200MB ACT CLR W/TRKBALL	2997 75

TEXAS INSTRUMENTS

TM4000E SX/25 120MB Mono	1697 57
TM4000 DX 25 200MB Mono	2177 86
TM4000E SX/25 120MB ADV Color	1879 46
TM4000E DX2/40 200MB PAS Color	2498 35
TM4000E DX2 50 200MB Mono	2427 06
TM4000E DX2 50 200MB DUAL Color	2736 56
TM4000E 4 50 200MB ACTIVE Color	3398 40
TM4000E DX4 75 340MB Color	4223 94
TM4000E DX4 75 455MB Color	4947 32

DOT MATRIX & LASER PRINTERS

OKIDATA

ML320	304 45	ML591	585.87
ML321	432 43	Pacemark 3410	1222 92
ML380	214 95	OL400E	499.98
ML395	989 32	OL410E	649 31
ML395C	1039 74	OL810	905.50
ML520	369 82	OL830+	1079 11
ML521	495 18	OL850 PS	1199.20
ML590	429 51	DOC-IT 4000	2245.10

Canon

BJ10SX	249 88	BJC600 Color	578.25
BJ200E	289 00	LBP430 LASER	588 50
BJ230	388 00	600DPI 8PPM	1298 57

EPSON

AP2250	115.63	LQ1170	609.93
AP3250	171 95	LQ2550	898 08
AP3260	181 43	DFX5000 Plus	1364 86
LX300	172.26	DFX8000	2269.45
FX870	267.59	STYLUS 300	228 80
FX1170	354 95	STYLUS 800	276 91
LQ570+	237.97	Action Laser 1500	656.70
LQ1070+	365 35	Action Laser 1600	982 23
LQ870	444 91		

IBM LEXMARK LASER PRINTERS

4037 5E 5PPM	657.17
4029-10 10PPM	1115 42
4039 10R 10PPM	1339 46
4039-10RD 10PPM DUPLEX	1839 77
4039 16L PLUS	2775 03
4039 12L PLUS	1891 25
4039 12R PLUS	1431.76
WinWriter 600 NEW!	1197.38

NEC

SuperScript 610	479.27
Silentwriter 640	788 58

Panasonic

1150	133 49	2624	409 49
1624	385 20	3123 NEW	249.00
2023	202.97	4410 LASER	547 15
2123	243 37	4430 LASER	686.91
2124	318.41	4440 LASER	1019.76

TEXAS INSTRUMENTS

MICROMARC INKJET*	248.00
MICROWRITER BASIC	517 16
MICROWRITER PS23	677 22
MICROWRITER PS65	937 20
MICROLASER PRO 600 PS23**	1308 00
MICROLASER PRO 600 PS65**	1528 25
POWERSTEP UPG- mL600	274.68

[illegible]

SHARP PRINTERS

SHARP JX9400 300DPI 4PPM	477.09
SHARP JX9460PS 600DPI 6PPM	949.88

HEWLETT PACKARD

DESKJET PORTABLE 310 w/CSF	367 00
HP DESKJET 520	289 00
HP DESKJET 560C	569 00
HP DESKJET 1200C	1449 61
HP DESKJET 1200C PS	2095 47
HP PAINTJET XL300	2258.93
LASERJET 4L	679.56
LaserJet 4P	979.74
LaserJet 4MP	1469 89
LaserJet 4plus	1498 60
LaserJet 4M plus	1998 27
LASERJET 4SI	2998.95
LASERJET 4SI MX	4508 36

*while supplies last

COSTAR

LabelWriter II DOS/Win	178.00
Address Express	329 00

HARD DRIVES & CONTROLLERS

Maxtor

170MB IDE	205.08	345MB SCSI	365.63
245MB IDE	238.46	540MB IDE	419.42
345MB IDE	298.80		

MICROPOLIS

2210A 1050MB IDE	824.49
2210 1050MB SCSI	828 40
2217 1 7GB SCSI	1106.60
2210AV 1 050GB SCSI AV	931 28
2217AV 1 765GB SCSI AV	1169.20
1936 3GB SCSI	2098.00

HARD DRIVES & CONTROLLERS

CONNER

210MB IDE	215 78	426MB IDE	305 87
343MB IDE	299.87	1GB SCSI	787.42
343MB SCSI	335 99		

Seagate

130MB IDE	187 81	535MB SCSI-2	649 44
200MB IDE	214 74	1.0GB SCSI-2	897 20
261MB IDE	237 80	1 05GB SCSI	848 00
341MB IDE	295 71	1 69GB SCSI-2	1599 31
452MB IDE	348.25		

WESTERN DIGITAL

Caviar 210MB IDE	221 99	Caviar 420MB IDE	319 00
Caviar 250MB IDE	239.24	Caviar 540MB IDE	431.14
Caviar 340MB IDE	299 64		

CONTROLLERS

ACCULOGIC IDE W/1PAR, 2SER, 1GAME	35.06
ACCULOGIC IDE W/BIOS	48 90
ACCULOGIC VLB IDE	89 76
ADAPTEC 1510A SCSI-2 CD KIT	89 86
ADAPTEC 1542CF SCSI-2	265 45
ADAPTEC 2742T EISA SCSI-2	339 22
ADAPTEC 2842 VLB SCSI-2	299 45
Promise IDE ISA Cache	99 88
Promise IDE VLB Cache	143 35

MODEMS & COMMUNICATIONS

USRobotics SPORTSTER MODEMS

14 4 INT	116 59	14 4 EXT W/FAX	139 50
14 4 INT W/FAX	119.50	Worldport 14.4	149 00
14.4 EXT	135 50		

COURIER MODEMS

V 32TERBO INT	333 60
V 32TERBO INT W/FAX	345 64
V 32TERBO EXT	378 23
V 32TERBO EXT W/FAX	395 08
DUAL STD TERBO INT W/FAX	708 13
DUAL STD TERBO EXT W/FAX	732 63

Hayes

ACCURA 2400B INT	59 10
ACCURA 2400 EXT	69 25
ACCURA 24EC + FAX 96 INT	89 49
ACCURA 96 + FAX 96 INT	139 95
ACCURA 96 + FAX 96 EXT	147 90
ACCURA 14 4 + FAX 14 4 INT	148 20
ACCURA 14 4 + FAX 14 4 EXT	156 80
OPTIMA 2400 V 42BIS EXT	112 64
OPTIMA 24 + FAX 96 EXT	119.34
OPTIMA 9600 EXT	338 50
OPTIMA 96 + FAX 96 EXT	354.42
OPTIMA 14 4 EXT	363.80
OPTIMA 14 4 + FAX 14.4 EXT	374.30
OPTIMA 14 4 + FAX 14 4 Pocket	296.93
HAYES OPTIMA 14 4 W/FAX	267 70
OPTIMA 28 8K V FC W/FAX EXT	439 13
ULTRA 9600 EXT	569 18
ULTRA 14 4 EXT	645.20
ESP Accelerated Single/Dual Serial	79.24/121 12

PRACTICAL PERIPHERALS

9600 Int w/FAX	122.95
9600 Mini Tower w/FAX	129 50
14 4 int w/FAX	133 70
14 4 Mini Tower w/FAX	149 55
28 8 int w/FAX	279 49
28.8 Mini Tower w/FAX	298.30

intel SATISFAXTION MODEMS

200 INT	209 50	400 EXT	309 59
400 INT	273.05		

FAX MODEMS

2400 V 42BIS INT	99 00	14.4 INT W/FAX	119 00
2400 V 42BIS EXT	114.52	14.4 EXT W/FAX	139.50
9600 EXT W/FAX	149.60		

BOCA

BOCA 14 4K INT W/FAX	105.00
BOCA 14 4K EXT W/FAX	132 51
V FC 24K BPS INT W/FAX	199 59
V.FC 24K BPS EXT W/16550 I/O BOARD.	229 64

MICROCOM

DESKPORTE ES 14 4	175 00
DESKPORTE FAST ES 28 8	235 00
DESKPORTE FAST EP 28 8	308 00

BATTERY BACKUP AND UPS

AMERICAN POWER

BACK UPS 250	99 34	BACK UPS 1250	498 77
BACK UPS 400	159 83	SMART UPS 400	299 95
BACK UPS 450	189 88	SMART UPS 600	363 38
BACK UPS 600	263 67	SMART UPS 900	569 80
BACK UPS 900	374 15	SMART UPS 1250	713 13
SURGEARREST NETWORK NEW	34 97		
SURGEARREST PRO NEW	33 58		
SURGEARREST NETWORK + PHONE	48 65		
LINE-R 600	119 09		

Best Power / Tripp Lite

BC250	99 11	BC600 LAN	249 00
BC400	155 59	BC750 LAN	313 90
BC500	189 42	BC900 LAN	359 67
BC500 LAN	199 40	BC1250 LAN	459 10

Smart UPS SERIES NEW

Smart 250 LAN	232 46	Smart 900 LAN	523 48
Smart 400 LAN	279 22	Smart 1250 LAN	659 66
Smart 500 LAN	309 09	Isobar 4 Outlet	38 95
Smart 600 LAN	333 98	Isobar 6 Outlet	46 38
Smart 750 LAN	428 53		

PCMCIA

BOCA 14 4K DATA/FAX	259 70
DATARACE 14 4K W/FAX	238 24
DATARACE 2400 W/FAX	168 70
DSP Tech Portable Sound+	154 34
EAGLE NE200C ETHERNET COAX	238 45
EAGLE NE200T ETHERNET	209 35
IBM TOKEN RING 16/4	367 73
INTEL 9600 W/FAX	217 73
INTEL 14 4 W FAX	251 25
INTEL 24/96 W/FAX	128 92
LINKSYS ETHERNET 10BT	175 15
LINKSYS ETHERNET COAX	175 15
MAXTOR MOBILEMAX 105MB HD	449 55
MEGAHERTZ 14 4 W/FAX	265 90
MEGAHERTZ GOLD 14 4 XJACK W/FAX	269 00
MEGAHERTZ 2400 XJACK W/FAX	129 77
MEGAHERTZ 9600 XJACK W/FAX	216 57
MINISTOR 42MB HARD DRV	296 25
NAT SEMI NE4100T ETHERNET 10BT	172 96
T CONRAD ETHERNET COAX	228 44
TRANTOR SLIM SCSI 2	279 45
TURTLE BEACH Audio Advantage	99 55
USR WORLDPORT 14 4 W/FAX	254 15
XIRCOM TOKEN RING ADAPTER	452 53
XIRCOM ETHERNET 10BT	212 19
XIRCOM ETHERNET COAX	214 79
XIRCOM ETHERNET COMBO	252 55

MEMORY UPGRADES

CDW® Features Delkin, Kingston, Pacific Data and Simple Technology Memory.

AST BRAVO 486LC 2MB	CALL!
AST POWEREXEC 486 4MB	CALL!
AST PREMIUM II 1MB CUPID SIMM	CALL!
AST PREMMIA 8MB UPG	CALL!
COMPAQ DESKTOPS-ALL MODELS	CALL!
COMPAQ CONTURA 486 8MB	CALL!
COMPAQ CONTURA 4MB	CALL!
COMPAQ LITE 4/25C 4MB	CALL!
EPSON ACTION LASER 2-8MB	CALL!
HP DESKJET 500 & 500C 256KB	CALL!
HP LASERJETS-ALL MODELS	CALL!
HP PAINTJET XL300 4MB	CALL!
IBM DESKTOPS-ALL MODELS	CALL!
IBM THINKPAD 700 4MB	CALL!
NEC SILENTWRITER 95 2MB	CALL!
NEC VERSA 4MB	CALL!
OKILASER 400 2MB	CALL!
OKILASER 800 2MB	CALL!
PANASONIC 4410, 4430 2-4MB	CALL!
PANASONIC P4450I 2MB	CALL!
TI MICROLASER 1MB	CALL!
TI TM4000 4MB	CALL!
TOSHIBA NOTEBOOKS ALL MODELS	CALL!

Please Call CDW for the Best, Most Current Pricing and Availability Information.

PROCESSOR/UPGRADES

CYRIX 486DRX/2 Upg 40Mhz	247 44
INTEL DX2/50 OVERDRIVE	296 61
INTEL DX2 66 OVERDRIVE	412 52
KINGSTON SX/NOW 25MHZ	169 45
KINGSTON SX NOW 33MHZ	196 25
KINGSTON 486/NOW 33MHz	255 52
KINGSTON 486/NOW 33MHZ	438 30

MATH COPROCESSORS

INTEL 387SX 16/20/25MHZ	76 84
INTEL 387SX 33MHZ	89 63
INTEL 387SL	76 22
INTEL 387DX	79 83

COMPUTER DISCOUNT WAREHOUSE™

CDW Computer Centers, Inc.
1020 E. Lake Cook Road
Buffalo Grove, IL 60089

CDW® Sells for Less and Services You Better!

(800) 886-4CDW

FAX (708) 465-6800

©1994 CDW® Computer Centers, Inc PCC974

CALL FOR FREE CDW® CATALOG

Circle 133 on reader service card.

COMPUTER DISCOUNT WAREHOUSE™

WHY PAY RETAIL? CDW® Sells For Less !

COMPUTER DISCOUNT WAREHOUSE™

IBM

Rated "Best" PC World, June '94

IBM PS/ValuePoint Computers . . .

ValuePoint models Si, Desktop & Tower listed in this ad include:

◆ One year on-site warranty ◆ 16 bit ISA data bus ◆ 4 SIMM sockets total (3 open) ◆ OverDrive™ Upgradability ◆ Pentium™ ◆ OverDrive P24T ready (except 425SX/Si) ◆ 16 bit IDE hard drive interface ◆ VESA local bus video ◆ 128K Flash Memory BIOS ◆ IBM PC DOS 6.1 & Windows 3.1 pre-loaded (hard drive models only) ◆ 100W power supply (Si-space saver models) ◆ 200W power supply (T-tower models, D-desktop models, P-Pentium models) ◆ Mouse

ValuePoint Pentium models listed in this ad include:

◆ One year on-site warranty ◆ 64 bit ISA data bus ◆ (1) 32 bit PCI local bus expansion slot ◆ (1) Shared 32 bit PCI local bus/16 bit ISA expansion slot ◆ (2) 16 bit expansion slots ◆ 4 SIMM sockets total (2 open) ◆ 273 pin Zero Insertion Force (ZIF) processor socket ◆ Future OverDrive ready ◆ 16 bit IDE hard drive interface

Model	Drive	CPU	RAM	Max	Slots	Bays 3.5(5.25)	CDW	Price
425SX/Si	120MB	486SX/25	4MB	64MB	3 (ISA)	2(1)	37727	$895.00
425SX/Si	212MB	486SX/25	4MB	64MB	3 (ISA)	2(1)	37728	$995.00
433DX/Si	120MB	i486DX/33	4MB	64MB	3 (ISA)	2(1)	37730	$1259.00
433DX/S	212MB	i486DX/33	4MB	64MB	3 (ISA)	2(1)	37731	$1389.00
466DX/Si	120MB	i486DX2/66	4MB	64MB	3 (ISA)	2(1)	37732	$1659.00
466DX/Si	212MB	i486DX2/66	4MB	64MB	3 (ISA)	2(1)	34851	$1759.00
425SX/D	170MB	i486SX/25	4MB	64MB	5(ISA)	3(2)	34956	$1170.00
425SX/D	245MB	i486SX/25	4MB	64MB	5(ISA)	3(2)	38056	$1280.00
433SX/D	170MB	i486SX/33	4MB	64MB	5(ISA)	3(2)	38058	$1260.00
433SX/D	245MB	i486SX/33	4MB	64MB	5(ISA)	3(2)	38060	$1370.00
433DX/D	212MB	i486DX/33	4MB	64MB	5(ISA)	3(2)	34957	$1559.00
433DX/D	340MB	i486DX/33	4MB	64MB	5(ISA)	3(2)	38061	$1719.00
450DX2/D	212MB	i486DX2/50	4MB	64MB	5(ISA)	3(2)	38063	$1670.00
450DX2/D	340MB	i486DX2/50	4MB	64MB	5(ISA)	3(2)	34801	$1840.00
466DX2/D	212MB	i486DX2/66	4MB	64MB	5(ISA)	3(2)	38065	$2000.00
466DX2/D	340MB	i486DX2/66	4MB	64MB	5(ISA)	3(2)	38066	$2159.00
433DX/T	212MB	486DX/33	4MB	64MB	8(ISA)	4(2)	39393	$1679.00
433DX/T	340MB	i486DX/33	4MB	64MB	8(ISA)	4(2)	39394	$1829.00
450DX2/T	212MB	i486DX2/50	4MB	64MB	8(ISA)	4(2)	39396	$1780.00
450DX2/T	420MB	i486DX2/50	4MB	64MB	8(ISA)	4(2)	39398	$2260.00
466DX2/T	340MB	i486DX2/66	4MB	64MB	8(ISA)	4(2)	39400	$2269.00
466DX2/T	527MB	i486DX2/66	4MB	64MB	8(ISA)	4(2)	39401	$2699.00
P60/D	527MB	Pentium/60MHz	16MB	128MB	2 (ISA) 2(PCI)	3(2)	33715	$3719.00

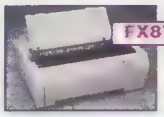
Call for Genuine Epson Accessories!

EPSON

EPSON Ink Jet Printers

Ink Jet Printers	Nozzles	Type	Resolution	Draft CPS	LQ CPS	Fonts	Buffer	Emulation	Paper Bin	Interface	Price	CDW
Stylus 300	48	Thermal	360 DPI	N/A	110	6 LQ(4 Scalable)	24K	ESC/P2	100 Sheet	Parallel	$228.80	31592
Stylus 800	48	Piezo	360 DPI	N/A	150	7 LQ(4 Scalable)	32K	ESC/P2	100 Sheet	Parallel	$251.97	28148

EPSON Dot Matrix Printers



Dot Matrix Printers	Pins	CPS HS Draft	CPS Draft/ Utility	CPS NLQ	CPS LQ	Color	Buffer	Interface	Emulation	Width	Price	CDW
AP2250	9		240	48			4K	Parallel	A	Narrow	$115.63	24064
AP3250	24		200		72		11K	Parallel	A	Narrow	$171.95	22301
AP3260	24		270		100	Opt.	11K	Parallel	B	Narrow	$197.00	30964
LX-810	9		240	48			4K	Parallel	A	Narrow	$164.95	12540
FX-870	9		380	68			24K	Parallel	A, D	Narrow	$267.59	24686
FX-1170	9		380	68			24K	Parallel	A, D	Wide	$354.95	25046
LQ-570+	24		337		112		8K	Parallel	A, B	Narrow	$237.97	28765
LQ-1070+	24		337		112		8K	Parallel	A, B	Wide	$365.35	30961
LQ-870	24	413	300		138		8K	Parallel	A, B	Narrow	$444.91	19683
LQ-1170	24	413	300		138		8K	Parallel	A, B	Wide	$609.93	19684
LQ-2550	24		500		167	Yes	8K	Par/Ser	F	Wide	$898.08	13693
DFX-5000 Plus	9	560	420	84			20K	Par/Ser	A, D	Wide	$1372.84	38206
DFX-8000	9	1066	960	192			3K	Par/Ser	C, E	Wide	$2269.45	13084

A=ESC/P B=ESC/P2 C=IBM Proprinter D=IBM Proprinter II E=FX-850,1050, DFX-5000 F=ESC/P LQ

If You Find a Better Price, Call CDW® Before You Buy!

CDW® Sells for Less and Services You Better!

(800) 886-4CDW

PCC974

©1994 CDW® Computer Centers Inc

GET DOWN TO BUSINESS WITH CDW'S LOW PRICES

Circle 134 on reader service card.

Free Product Information

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS MAIL PERMIT NO. 433 RIVERTON, NJ

POSTAGE WILL BE PAID BY ADDRESSEE

PC Computing
P.O. BOX 1689
RIVERTON, NJ 08077-9689

PC Computing FREE PRODUCT INFORMATION

Circle the numbers below corresponding to products featured in this issue's advertisements and listed in the Editorial Product Index. Manufacturers will mail product literature to you free of charge.

Void after October 31, 1994

PRODUCTS FEATURED IN ADVERTISEMENTS

101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125
126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150
151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200
201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225
226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250
251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275
276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300
301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325
326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350
351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375
376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400
401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425
426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450
451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475
476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500
501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525
526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550
551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575
576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600

PRODUCTS FEATURED IN EDITORIAL

601	602	603	604	605	606	607	608	609	610	611	612	613	614	615
616	617	618	619	620	621	622	623	624	625	626	627	628	629	630
631	632	633	634	635	636	637	638	639	640	641	642	643	644	645
646	647	648	649	650	651	652	653	654	655	656	657	658	659	660
661	662	663	664	665	666	667	668	669	670	671	672	673	674	675
676	677	678	679	680	681	682	683	684	685	686	687	688	689	690
691	692	693	694	695	696	697	698	699	700	701	702	703	704	705
706	707	708	709	710	711	712	713	714	715	716	717	718	719	720
721	722	723	724	725	726	727	728	729	730	731	732	733	734	735
736	737	738	739	740	741	742	743	744	745	746	747	748	749	750
751	752	753	754	755	756	757	758	759	760	761	762	763	764	765
766	767	768	769	770	771	772	773	774	775	776	777	778	779	780
781	782	783	784	785	786	787	788	789	790	791	792	793	794	795
796	797	798	799	800	801	802	803	804	805	806	807	808	809	810
811	812	813	814	815	816	817	818	819	820	821	822	823	824	825
826	827	828	829	830	831	832	833	834	835	836	837	838	839	840
841	842	843	844	845	846	847	848	849	850	851	852	853	854	855
856	857	858	859	860	861	862	863	864	865	866	867	868	869	870
871	872	873	874	875	876	877	878	879	880	881	882	883	884	885
886	887	888	889	890	891	892	893	894	895	896	897	898	899	900

Please answer questions below:

1. **Where do you use your computer?** (Check one only)
   A ☐ Home B ☐ Business C ☐ Both
2. **What kinds of computers do you use?** (Check all that apply)
   D ☐ IBM/Compatible Laptop E ☐ IBM/Compatible Desktop F ☐ MAC
3. **Do you plan to buy any of the hardware or software mentioned below in the next three months?** (Check all that apply)

HARDWARE
G ☐ PC
H ☐ MAC
I ☐ Laptop
J ☐ Printer
K ☐ Monitor
L ☐ Disk/Tape Back-up
M ☐ Add-in Board
N ☐ Modem
O. ☐ Input Device
P ☐ Local Area Network

SOFTWARE
Q ☐ Accounting
R ☐ Spreadsheet
S ☐ Personal Finance
T ☐ Desktop Publishing
U ☐ Word Processor
V ☐ Database Manager
W ☐ Graphics
X ☐ Utility
Y ☐ Communications
Z ☐ Windows/Multi-tasking
1 ☐ Programming Language, Compiler
2 ☐ Integrated/Multifunction
3 ☐ CAD

4. **From which of the following sources do you purchase personal computer products?** (Check all that apply)
   4 ☐ Specialty Computer Retail Stores 6 ☐ Direct from Manufacturers
   5 ☐ Mail Order Firms 7 ☐ Other

PLEASE PRINT CLEARLY PCC 7/94-4

Name

Title | Telephone

Company Name

Address

City | State | Zip

5 ☐ Please send me a one-year (12 issue) subscription to PC/Computing for $16.94 (U.S. price). all other countries add $16.00 for additional postage.

PC Computing FREE PRODUCT INFORMATION

Circle the numbers below corresponding to products featured in this issue's advertisements and listed in the Editorial Product Index. Manufacturers will mail product literature to you free of charge.

Void after October 31, 1994

PRODUCTS FEATURED IN ADVERTISEMENTS

101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125
126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150
151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200
201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225
226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250
251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275
276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300
301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325
326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350
351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375
376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400
401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425
426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450
451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475
476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500
501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525
526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550
551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575
576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600

PRODUCTS FEATURED IN EDITORIAL

601	602	603	604	605	606	607	608	609	610	611	612	613	614	615
616	617	618	619	620	621	622	623	624	625	626	627	628	629	630
631	632	633	634	635	636	637	638	639	640	641	642	643	644	645
646	647	648	649	650	651	652	653	654	655	656	657	658	659	660
661	662	663	664	665	666	667	668	669	670	671	672	673	674	675
676	677	678	679	680	681	682	683	684	685	686	687	688	689	690
691	692	693	694	695	696	697	698	699	700	701	702	703	704	705
706	707	708	709	710	711	712	713	714	715	716	717	718	719	720
721	722	723	724	725	726	727	728	729	730	731	732	733	734	735
736	737	738	739	740	741	742	743	744	745	746	747	748	749	750
751	752	753	754	755	756	757	758	759	760	761	762	763	764	765
766	767	768	769	770	771	772	773	774	775	776	777	778	779	780
781	782	783	784	785	786	787	788	789	790	791	792	793	794	795
796	797	798	799	800	801	802	803	804	805	806	807	808	809	810
811	812	813	814	815	816	817	818	819	820	821	822	823	824	825
826	827	828	829	830	831	832	833	834	835	836	837	838	839	840
841	842	843	844	845	846	847	848	849	850	851	852	853	854	855
856	857	858	859	860	861	862	863	864	865	866	867	868	869	870
871	872	873	874	875	876	877	878	879	880	881	882	883	884	885
886	887	888	889	890	891	892	893	894	895	896	897	898	899	900

Please answer questions below:

1. **Where do you use your computer?** (Check one only):
   A. ☐ Home B. ☐ Business C. ☐ Both
2. **What kinds of computers do you use?** (Check all that apply):
   D. ☐ IBM/Compatible Laptop E. ☐ IBM/Compatible Desktop F. ☐ MAC
3. **Do you plan to buy any of the hardware or software mentioned below in the next three months?** (Check all that apply):

HARDWARE
G. ☐ PC
H. ☐ MAC
I. ☐ Laptop
J. ☐ Printer
K. ☐ Monitor
L. ☐ Disk/Tape Back-up
M. ☐ Add-in Board
N. ☐ Modem
O. ☐ Input Device
P. ☐ Local Area Network

SOFTWARE
Q. ☐ Accounting
R. ☐ Spreadsheet
S. ☐ Personal Finance
T. ☐ Desktop Publishing
U. ☐ Word Processor
V. ☐ Database Manager
W. ☐ Graphics
X. ☐ Utility
Y. ☐ Communications
Z. ☐ Windows/Multi-tasking
1. ☐ Programming Language/Compiler
2. ☐ Integrated/Multifunction
3. ☐ CAD

4. **From which of the following sources do you purchase personal computer products?** (Check all that apply):
   4. ☐ Specialty Computer Retail Stores 6. ☐ Direct from Manufacturers
   5. ☐ Mail Order Firms 7. ☐ Other

PCC 7/94-4

PLEASE PRINT CLEARLY

Name

Title | Telephone

Company Name

Address

City | State | Zip

5. ☐ Please send me a one-year (12 issue) subscription to PC/Computing for $16.94 (U.S. price). all other countries add $16.00 for additional postage

Free Product Information

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS MAIL PERMIT NO. 433 RIVERTON, NJ

POSTAGE WILL BE PAID BY ADDRESSEE

PC Computing
P.O. BOX 1689
RIVERTON, NJ 08077-9689

MEMORY SUPER SOURCE

LIFETIME* WARRANTY 100% GUARANTEED

WE WILL BEAT ANY LEGITIMATE PRICE QUOTED BY A COMPETITOR IN THIS ISSUE.

COMPAQ · ALR · hp · DELL · ZENITH · AT&T · EVEREX · TOSHIBA · IBM · OKIDATA · Apple · EPSON · SUN · AST · MAGNAVOX · NEC · SHARP · CANON · ACER · QMS

Seagate

FACTORY NEW 1 5 YEAR WARRANTY

IDE			
130MB	ST3145A	15MS 3 5X1	$ 172
128MB	ST9145AG	16MS 2 5"	299
260MB	ST3290A	16MS 3 5X1"	218
340MB	ST3390A	12MS 3 5"	265
209MB	ST9235AG	16MS 2 5"	379
452MB	ST3550A	12MS 3 5X1'	334
540MB	ST3655A	12MS 3 5"	413
SCSI			
457MB	ST3550N SCSI-2	12MS 3.5X1"	470
540MB	ST3600N SCSI-2	11MS 3 5X1"	490
343MB	ST3390N SCSI-2	12MS 3 5X1"	339
1420MB	ST41650N	15MS 3 5X1"	1039
1350MB	ST41600N	12MS FH	1559
1 2GB	ST11200N SCSI-2	10MS 3 5"	770
1 2GB	ST31200N	9MS 3 5X1"	750
1 2GB	ST41200N	14MS FH	959
2 1GB	ST42100N SCSI-2	14MS FH	1350
2 1GB	ST42400 SCSI-2	11MS FH	1559
3 55GB	ST43400N SCSI-2	10MS FH	2025
1 7GB	ST11900N	9MS 3 5'	1192
1 7GB	BARRACUDA-I ST11950N SCSI-2 3 5"		1477
2 1GB	BARRACUDA-II ST12550N SCSI-2 3 5'		1650
2 2GB	ST12400N SCSI-2	12MS 3 5"	1395
4 1GB	ST15150N-W	8MS 3 5"	CALL
9GB	ST410800N-W	11MS FH	CALL

Maxtor

FACTORY NEW 2 YEAR WARRANTY

IDE			
130MB	7131A	14MS 3 5X1'	185
170MB	7171A	13MS 3 5X1'	186
273MB	7273A	12MS 3 5X1"	252
345MB	7345A	15MS 3 5"	263
540MB	7546A	8 5MS 3 5"	450
SCSI			
273MB	7273S	15MS 3 5X1"	CALL
290MB	7290S	14MS 3 5X1'	CALL
345MB	7345S SCSI-2	12MS 3 5"	339
540MB	540S	8MS 3 5X1"	571
1 2GB	1240S SCSI-2	8MS 3 5"	1245

CONNER

FACTORY NEW – 1 YEAR WARRANTY

IDE			
170MB	CFA170A	17MS 3 5X1	$ 179
212MB	CFS210A	12MS 3 5X1"	198
250MB	CP30254H	14MS 3 5"	226
340MB	CFA340A	14MS 3 5X1"	271
420MB	CFS420A	14MS 3.5X1"	293
540MB	CP30544	10MS 3 5X1	435
SCSI			
170MB	CFA170S	13MS 3 5X1'	195
340NB	CFA340S	13MS 3 5X1"	305
540MB	CP3540 SCSI-2	10MS 3 5"	571
1GB	CP1060S SCSI-2	10MS 3 5"	812

HEWLETT PACKARD

FACTORY NEW 5 YEAR WARRANTY

SCSI			
1 0GB	C2247	10MS 3 5'	799
2 1GB	C2490	8 9MS 3 5"	1489

TOSHIBA

5 YEAR WARRANTY ON 3 5"
1 YEAR WARRANTY ON 2 5"

SUPERFAST SCSI-2			
200MB	IDE MK2224	17MS 2 5'	$418
200MB	SCSI MK2224	17MS 2 5"	439
340MB	IDE MK2326	2 5"	588

1 x 9 $48
4 x 9 $168
70 NS SIMMS

4MB X 9-80NS S MM-PC	160	255K X 9-100NS SIMM	13	1MB X 9-70NS SIPP	53		
4MB X 9-70NS SIMM	188	256K X 9-80NS SIMM	14	1MB X 9-60NS SIPP	55		
4MB X 9-60NS SIMM	175	256K X 9-70NS SIMM	15	256K X 9-100NS SIPP	18		
1MB X 9-100NS 9 CHIP SIMM	40	256K X 9-60NS SIMM	18	256K X 9-80NS SIPP	19		
1MB X 9-80NS 3 CHIP SIMM	40	1MB X 8-80NS SIMM	42	256K X 9-70NS SIPP	20		
1MB X 9-80NS 9 CHIP SIMM	46	1MB X 8-70NS SIMM	45	256K X 9-60NS SIPP	23		
1MB X 9-70NS 3 CHIP SIMM	42	4MB X 8-80NS SIMM	150	256 X 36 – 1MB	50		
1MB X 9-70NS 9 CHIP SIMM	48	4MB X 8-70NS SIMM	185	512 X 36 – 2MB	85		
1MB X 9-60NS 3 CHIP SIMM	44	1MB X 9-100NS SIPP	45	1 X 36 – 4MB	175		
1MB X 9-60NS 9 CHIP SIMM	50	1MB X 9-80NS SIPP	61	2 X 36 – 8MB	375		
1MB X 9-53NS 9 CHIP SIMM	55			4 X 36 – 16MB	695		
16MB X 9-70NS SIMM	775						

MOTHER BOARDS

OPTI	
386DX-33-64K CACHE W/CPU	CALL
386DX-33-256K CACHE W/CPU	CALL
386DX-40-84K CACHE W/CPU	CALL
386DX-40-256K CACHE W/CPU	CALL
486SX-25-64K CACHE W/CPU	CALL
486DX-33-64K CACHE W/CPU	CALL
486DX-33-256K CACHE W/CPU	CALL
486DX 50-256K CACHE W/CPU	CALL
OCEAN	
JAGUAR 386DX-40 6-ISA, 8-30P	CALL
486SX-25 6-ISA, 33VLB DCA CACHE 8-30	CALL
486SX-33 6-ISA, 3VLB, DCA CACHE, 8-30P	CALL
486DX-40 6 ISA, 3VLB DCA CACHE, 8-33P	CALL
486DX2-66 6-ISA 3VLB, DCA CACHE 8-30P	CALL
PENTIUM PCI BOARDS	
MICRONICS M5PL Pentium 60MHZ 5-ISA 3-PCI, 256K, 4-72P, IDE, I/O	CALL
AIR 60MHZ, 4-EISA, 2-PCI SCSI IDE, IO	CALL
PENTIUM VESA BOARDS	
TYAN 60MHZ, 8ISA, 3-VESA, 256K UP TO 2MG	CALL
OCEAN 660MHZ 8-ISA, 2-VESA, 256K HEADLAND	CALL
AIR 560MHZ 7-ISA 3-VESA 256K, IDE/IO	CALL
GREEN PC BOARDS	
OCEAN DX2 6-ISA, 3-VESA, DCA CACHE	CALL
FORTRESS 486DX2-66 7-ISA, 3-VESA, 256K	CALL
OCEAN DX2 66, 6-ISA, 3-VESA, 256K, IDE I/O	CALL
IBM - 66MHZ AT 33MHZ PRICES	
ISA 486SLC 66, 7-ISA 16K, 8-30 PIN SIMMS	CALL
VESA 486SLC-66 7-ISA, 3-VESA, 16K, 8-30P	CALL
AMERICAN DIGICOM	
486SX-25 ISA 128K	CALL
486DX2-66 ISA 128K	CALL
486DX 33 VESA 256K	CALL
486DX2-66 VESA 256K	CALL
NICE Made in U.S.A.	
MINI 486DX-33 5-ISA, 3-ELSA, 2VBL, 256K,8-30P, ZLF	CALL
MINI 486DX-50 5-ISA 3-EISA,2-VELB 256K 8-30PZLF	CALL
MINI 486DX2-66 5-ISA, 3-EISA, 2-VLB, 1 MEG 8 30P, ZIF	CALL
EISA/2 486DX-50 6-EISA 2-ISA 512K, 16-30P ZIF	CALL
SUPER 486DX2-33 8-EISA 1-VLB 256K, 16-30P ZIF	CALL
SUPER 486DX2-50 8-EISA 1-VLB 512K, 16-30P ZIF	CALL
SUPER 486DX2-66 8-EISA 1-VLB 1MEG, 16-30P ZIF	CALL
A.I.R. Made in U.S.A.	
486SX-25 8-ISA, 3-VESA 256K 8-30P, ZIF	CALL
486DX2-33 8-ISA, 3-VL 256K 8-30P ZIF	CALL
486DX2-66 8-ISA, 3-VESA 256K 8-30P, ZIF	CALL
486DX2-66 7-ISA, 2-VESA 256K 8-30P, IDE, SCSI, I/O	CALL
486DX2-50 8-ISA, 3-VESA 256K, 4-72P, ZIF	CALL
486DX2 66 8-ISA 3-VESA 256K, 4-72P, ZIF	CALL
VEGA Made in U.S.A.	
486DX-33 8-ISA, 3-VESA, 256K, 8-30P, ZIF	CALL
486DX-33 8-ISA, 3-VESA, 256K,8-30P,ZIF	CALL
486DX-660 8-ISA, 3-VESA, 256K, 8-30P, ZIF	CALL
486DX2-66 4-PCI 5-ISA, 3-VESA, 256K, ZIF	CALL
486DX2-66, 8-ISA, 3VESA 256K, ZIF	CALL
MICRONICS (U.S.A.)	
MX-30 486DX 33 8-ISA, 2VESA 256K, 4-72P	CALL
JX-30 486DX2-33 8-ISA, 2VESA IDE , 4-72P	CALL
JX-30 486DX2-66 8-ISA, 2VESA IDE 4-72P	CALL
EISA-3, 486DX-33 8-32, 256K, 4-72P	CALL
EISA-3, 486DX-66 8-32 256K, 4-72P	CALL
M4P-3 486DX2-66 6-ISA, 3-PCI, 256K,4-72P, GREEN	CALL
M5PI PENTIUM, 60MHZ, 5-ISA, 3-PCI, 256K, 4-72P, IDE, I/O	CALL
MYLEX (U.S.A.)	
486DX2-66 256K MULTI I/O	CALL
486DX-50 EISA 256K MULTI I/O	CALL
486DX2-66 VESA 64K MULTI I/O	CALL
486DX2-66 EISA/VESA 256K MULTI I/O	CALL
AMI Made in U.S.A.	
S-VOY 486DX-33, 7-ISA, 2VESA, 256K, 8-30P, IDE	CALL
S-VOY 486DX2-66 7-ISA, 2VESA 256K, 4-72P, IDE	CALL
ENT-IV 486DX-33 8-EISA,2-VESA 256K, 16-30P	CALL
ENT-IV 486DX2-66 8-EISA, 2 VESA, 256K, 16-30P	CALL
S-VOY 486DX2-66, 5-ISA, 2PCI, 256K, 8-30P, SCSI, IDE	CALL
EISA-3 486DX2-66, 8-32, 256K, 4-72P	CALL

Quantum

FACTORY NEW – 2 YEAR WARRANTY ELS & LPS
5 YEAR WARRANTY ON P. DRIVES
1 YEAR WARRANTY ON 2.5" DRIVES

CAPACITY	M/N	SPEED	SIZE	PRICE
IDE				
127MB	ELS127A	17MS	3 5X1'	$181
170MB	ELS170A	17MS	3 5X1"	193
270MB	ELS270A	16MS	3 5X1"	259
340MB	LPS340A	16MS	3 5X1"	265
540MB	LPS540A	10MS	3 5X1"	436
SCSI				
170MB	ELS170S	17MS	3 5X1"	195
270MB	LPS270S	16MS	3 5X1"	270
340MB	LPS340S	16MS	3 5X1"	265
540MB	LPS540S SCSI-2	10MS	3 5X1'	436
1GB	P1080S SCSI-2	10MS	3 5X1'	879
1 2GB	P1225S SCSI-2	10MS	3 5"	884
1 8GB	P1800S SCSI-2	10MS	3 5"	999

MICROPOLIS

FACTORY NEW - 5 YEAR WARRANTY

IDE			
976MB	2210A	10MS 3 5"	$808
1 6GB	2217A	10MS 3 5'	1030
SCSI-2			
976MB	MC2210	10MS 3 5'	808
1 2GB	MC4110	9MS 3 5X1"	740
1 2GB	MC1598	15MS FH	811
1 6GB	MC1908	10MS FH	1099
1 75GB	MC2217	10MS 3 5"	1030
2 0GB	MC1548	14MS FH	1173
2 1GB	MC1926	11MS 3 5'	1350
3 6GB	MC1936	11MS FH	2145
4 1GB	MC4410	8MS 3 5"	CALL
9GB	MC1991	11MS FH	CALL

digital

FACTORY NEW FULL WARRANTY
DISK DRIVES FOR POWER USERS

SCSI-II			
535MB	DSP3053L	9 5MS 3 5X1"	620
1 0GB	DSP3107L	9 5MS 3 5X1"	770
1 0GB	VP3107	9MS 3 5X1"	CALL
1 3GB	DSP3133L	9 5MS 3 5X1"	1040
1 6GB	DSP3160	9 5MS 3 5"	1065
2 1GB	DSP3210	9MS 3 5"	1370
2 2GB	VP3215	9MS 3 5X1"	CALL
3 5GB	DSP5350	12MS FH	2205
4 0GB	DSP5400	12MS FH	2452
4 3GB	SP3430	9MS 3 5"	CALL

FUJITSU

FACTORY NEW 5 YEAR WARRANTY

IDE			
520MB	M2624T	12MS 3 5	487
SCSI			
1 2GB	M2694ESA	10MS 3 5"	780
2 1GB	M2654S	12MS FH	1343

WESTERN DIGITAL

FACTORY NEW 3 YEAR WARRANTY

IDE			
212MB	WD2200	12MS 3 5X1"	$ 205
250M6	WD2250	14MS 3 5X1"	219
340MB	WD2340	12MS 3 5X1"	268
420MB	AC2420	13MS 3 5X1"	286
540MB	WD2540	11MS 3 5X1"	402

DYNAMIC RAMS

1MB X 1-100NS	$6.00
1MB X 1-80NS	6.25
1MB X 1-70NS	6.50
1MB X 1-60NS	6.75
256K X 1-150NS	3.00
256K X 1-120NS	3.25
256K X 1 100NS	3.50
256 X 1-80NS	3.75
256K X 1-70NS	3.75
256K X 1-60 NS	3.75
256K X 4-100NS	6.00
256K X 4-80NS	6.25
256K X 4-70NS	6.50
256K X 4-60NS	6.75

CACHE

8 X 8-15	5.00
32 X 8-15	16.00
8 X 8-25	4.00
32 X 8-25	7.80
64 X 4-25	8.00
16 X 4-25	5.00
8 X 8-20	4.50
32 X 8-20	9.00
64 X 4-20	10.00
16 X 4-20	5.50
16 X 4-15	9.00
64 X 1-20	18.00
64 X 1-15	20 00

MATH CO-PROCESSORS

INTEL	
8087 5MHZ INTEL	49.00
8087 2 8MHZ INTEL	139.00
8087 1 1MHZ INTEL	89.00
80287-6 6MHZ INTEL	49.00
80287 8 8MHZ INTEL	49.00
80287-10 10MHZ INTEL	59.00
80287XL 10MHZ INTEL	75.00
80287XL12 12MHZ INTEL	75.00
80387SX 16 16MHZ INTEL	75.00
80387SX 20 20HZ INTEL	75.00
80387SX 25 25HZ INTEL	75.00
80387DX 16 16MHZ INTEL	75.00
80387DX 20 20MHZ INTEL	75.00
80387DX 25 25MHZ INTEL	75.00
80387DX 33 33MHZ INTEL	75.00
80487SX 25 INTEL	375.00
OVERDRIVE SX DX33	499.00
OVERDRIVE SX DX25	299.00
OVERDRIVE SX DX20	299.00
RAPID CAD	199.00
CYRIX	
83D87DX 16 16MHZ CYRIX	75.00
83D87DX 20 20MHZ CYRIX	75.00
83D87DX 25 25MHZ CYR X	75.00
3D87DX 33 33MHZ CYR X	75.00
83D87DX 40 40MHZ CYRIX	85.00
83S87SX16 16MHZ CYRIX	69.00
83S87SX20 20MHZ CYRIX	69.00
83S87SX25 25MHZ CYR X	69.00
82S87XL CYR X	69.00
WEITEK	
3167 33MHZ WEITEK	295.00
4167 25MHZ WEITEK	295.00
4167 33MHZ WE TEK	495.00
IIT	
2C87 8 8MHZ IIT	54.00
2C87 10 10MHZ IIT	54.00
2C87-12 12MHZ IIT	60.00
2C87 20 20MHZ IIT	64.00
3C87 16 16MHZ IIT	69.00
3C87 20 20MHZ IIT	69.00
3C87 25 25MHZ IIT	69.00
3C87 33 33MHZ IIT	69.00
3C87 40 40MHZ IIT	75.00
3S87SX 16 16MHZ IIT	69.00
3S87SX 20 20MHZ IIT	69.00
3S87SX 25 25MHZ IIT	69.00
3S87SX 33 33MHZ IIT	69.00

INTEL CPUs

386 DX	
80386 DX/25	85.00
80386 DX/33	75.00
AMD DZ40	80.00
486DX/SX	
80486 DX/25	250.00
80486 DX33	299.00
80486 DX 50	399 00
80486 DX-2/50	425.00
80486 DX-2/66	499.00
80486 SX.25	125.00
80486 SX:33	145.00

PS 2 HARD DRIVES

PS/2 50, 50Z, 55SX, 60, 70, 80 P70

INTERNAL DRIVE KITS May be used as a high performance replacement or to co-exist with the original IBM drive. Compatible with DOS 3 3 4 01 5 0 DOS/2 2 0 and Novell includes IDE or SCSI-2 microchannel controller hard drive mounting kit ribbon and power cable manual and hardware

109MB 19MS IDE	383.00
125MB 15MS IDE	414.00
125MB 15MS SCSI	439.00
200MB 15MS IDE	453.00
200MB 15MS SCSI	513.00
340MB 13MS IDE	589.00
340MB 13MS SCSI	669.00
512MB 12MS IDE	1043.00
512MB 12MS SCSI	1284.00
1 2GB 12MS SCSI	1443.00

PS/2 MODEL 25, 30, 30-286

INTERNAL DRIVE KITS - includes controller drive mounting kit cables and hardware Supports DOS 5 0 Windows 3 1

42MB HARD DRIVE KIT	189 00
108MB HARD DRIVE KIT	253.00
125MB HARD DRIVE KIT	284.00
200MB HARD DRIVE KIT	323.00
MICROCHANNEL CONTROLLER	
IDE	169.00
SCSI-2	179.00

IDE CONTROL ER supports all internal IDE drives Zero slot installation for model 50 & 50Z

SCSI 2 CONTROL ER supports 7 internal or external SCSI drives CD Roms & Tape Backups with 7 year warranty Both support DOS 5 0 Windows & OS/2 compatible with existing IBM drive and controllers

CALL FOR LATEST SUPER PRICES 1-800-457-6937

FOR MEMORY PRODUCTS NOT LISTED – CALL FOR PRICES AND AVAILABILITY

TECHNICAL SUPPORT 215-922-4640 FAX 1-215-922-0116 636679

PURCHASE ORDERS FROM GOVERNMENT AGENCIES – UNIVERSITIES – FORTUNE 2000 FIRMS 1-800-MEMORY-2

ALL CREDIT CARDS ARE VERIFIED FOR FRAUDULANT USE HOURS MON-FRI 9-5 SAT 10-3. ORDERS FROM ANYWHERE IN THE USA OR CANADA CALL FOR CALL FOR CURRENT PRICES AND VOLUME DISCOUNTS PRICES AND AVAILABILITY SUBJECT TO CHANGE ORDER LINES OPEN 5 DAYS MINIMUM ORDER $50 00 USA SHIPPING AND HANDLING AIR $12 00 AIR OVERNIGHT $18 00 COD ADD $4 00 PA RESIDENTS ADD 7% SALES TAX PREPAID ORDERS CALL FOR CONFIRMATION ALL RETURNS REQUIRE RMA# AND ORIGINAL INVOICE CANCELLED ORDERS AND REFUNDS FOR CREDIT SUBJECT TO 25% RESTOCKING CHARGE RETURNED MERCHANDISE MUST BE IN NEW CONDITION AND RECEIVED WITHIN 14 DAYS FROM INVOICE DATE SORRY NO REFUNDS AFTER 14 DAYS SHIPPING AND HANDLING CHARGES NOT REFUNDABLE INTERNATIONAL ORDERS WELCOME APO FPO ORDERS WELCOME P O S ACCEPTED FROM GOVERNMENT AGENCIES UNIVERSITIES FORTUNE 2000 COMPANIES SUBJECT TO APPROVAL ALL MEMORY PRODUCTS ARE THIRD PARTY ALL TRADEMARKS ARE THE PROPERTY OF THEIR RESPECTIVE OWNERS ALL WORLDWIDE TECHNOLOGIES PRODUCTS COME WITH A LIFETIME WARRANTY EXCEPT 30 DAY WARRANTY ON CHIPS AND ONE YEAR WARRANTY ON MOTHER BOARDS ALL HARD DRIVES ARE MANUFACTURERS WARRANTY ONLY

WORLDWIDE TECHNOLOGIES 437 Chestnut Street, Philadelphia, PA 19106 Customer Service 215-922-4640

DON'T SETTLE FOR LESS
BUY WORLDWIDE TECHNOLOGIES SIMMS
ORIGINAL — HIGH QUALITY — LOW PRICES

ALL 1x9 AND 4x9 SIMMS DELIVERED BY
WORLDWIDE TECHNOLOGIES ARE ORIGINAL BRANDS
NOT THIRD PARTY IMITATIONS SHIPPED BY OUR COMPETITORS
• LIFETIME WARRANTY • 14 DAYS NO QUIBBLE REFUNDS
• WANG APPROVED 1x9 AND 4x9 SIMMS
YOU'LL RECEIVE ORIGINAL BOARDS LIKE
OKI/OKI•NEC/NEC•HITACHI/HITACHI•MITSUBISHI MITSUBISHI•SIEMENS/SIEMENS•MOTOROLA/MOTOROLA•T.I./T.I.•CENTURY/CENTURY•TOSHIBA/TOSHIBA•SAMSUNG/SAMSUNG•GOLDSTAR/GOLDSTAR — AND OTHERS.
BEWARE OF LOW PRICED THIRD PARTY IMITATION 1x9 AND 4x9 SIMMS
WHY BUY ANYWHERE ELSE? CALL US!!

7/94

Circle 251 on reader service card.

MIDWEST MICRO'S MAKING HEADLINES

A PULITZER PRIZE

For outstanding achievement in customer satisfaction...the prize goes to MidWest Micro. After more than a decade in the business, MidWest Micro is still making headlines across America with top-of-the line products, great value and friendly service. You know you can count on us for the latest technology at the best possible prices.

HOT OFF THE PRESS

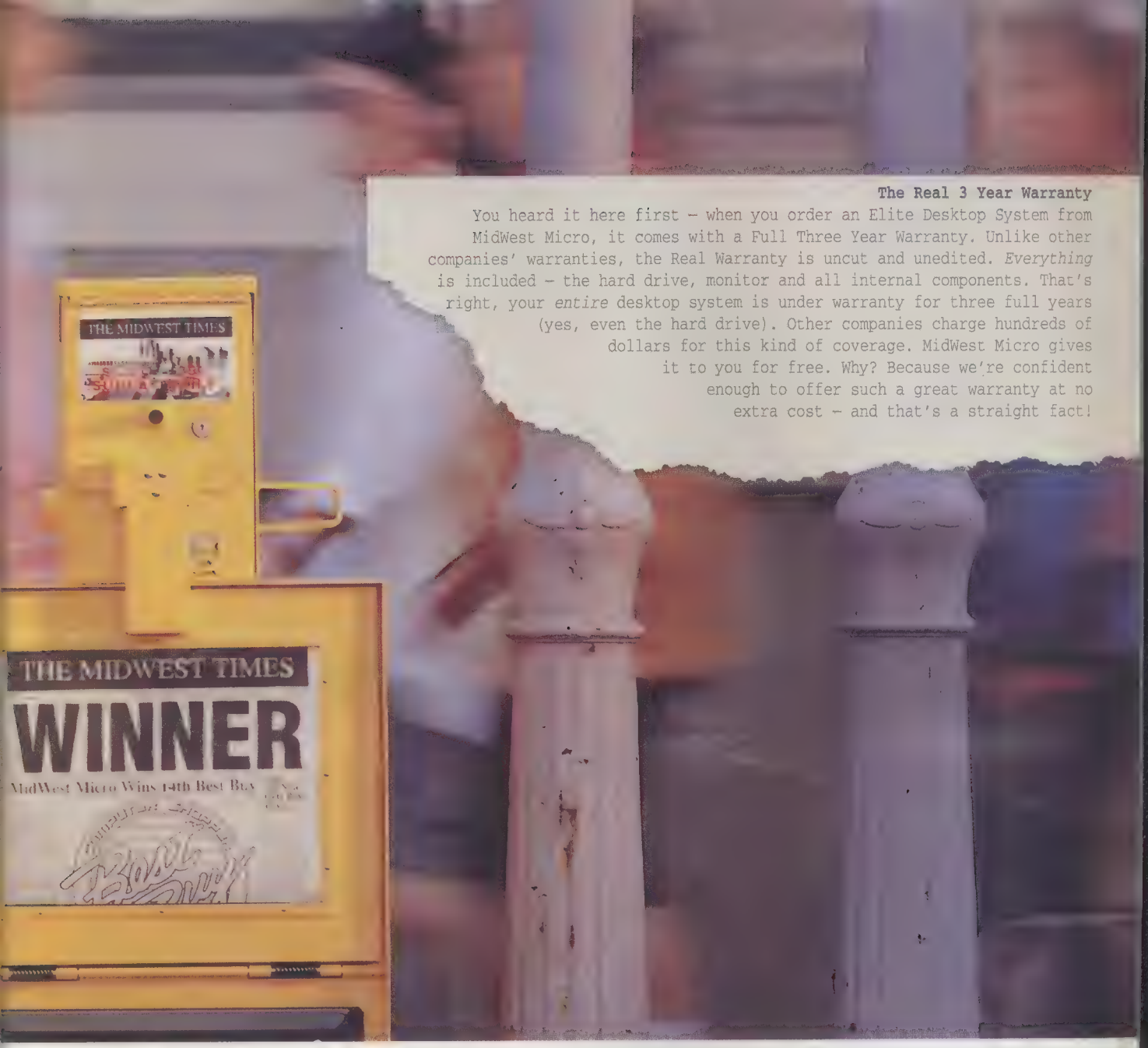
At MidWest Micro, we always go out of our way for you. We even give you the option of custom configuring a desktop system in one of five sleek case designs (slimline, desktop, mini-tower, middle-tower and full-tower). We'll install fax modems, more RAM, a larger hard drive and more.

PC Computing ★★★★★

energy EPA POLLUTION PREVENTER

3 YEAR

Circle 276 on reader service card.



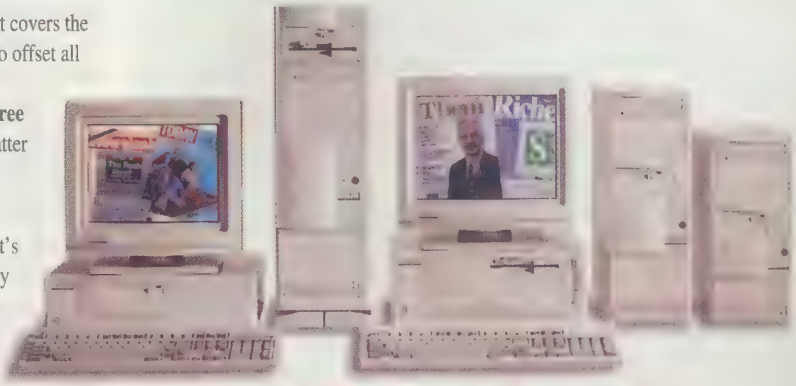
The Real 3 Year Warranty

You heard it here first – when you order an Elite Desktop System from MidWest Micro, it comes with a Full Three Year Warranty. Unlike other companies' warranties, the Real Warranty is uncut and unedited. *Everything* is included – the hard drive, monitor and all internal components. That's right, your *entire* desktop system is under warranty for three full years (yes, even the hard drive). Other companies charge hundreds of dollars for this kind of coverage. MidWest Micro gives it to you for free. Why? Because we're confident enough to offer such a great warranty at no extra cost – and that's a straight fact!

FRONT PAGE NEWS

MidWest Micro tops the news with the Real Three Year Warranty that covers the monitor, hard drive and all internal components – but we don't want to offset all the other services our customers enjoy, like a **30-Day Money Back Guarantee, Immediate Parts Replacement Policy, Lifetime Toll-Free Technical Support and an On-Line Bulletin Board Service**. No matter how the other companies word it, they just don't deliver service and support like this.

Great products, a well-informed sales team and unbeatable prices — it's no wonder MidWest Micro has earned 14 Computer Shopper Best Buy Awards (chosen by Shopper readers) and PC Computing's Five-Star Rating for outstanding service and support. (Check out the article in *The MidWest Times!*) MidWest Micro has been on a winning streak since 1989, and we don't plan on slowing down anytime soon. We're not the only ones winning, though. With affordable technology and friendly service, when you buy from MidWest Micro, you win, too.



MidWest Micro

1-800-682-7248

Circle 272 on reader service card.

News Never Traveled So Fast!

"Did you say clock-tripling speeds?"
"I heard the Three-Year Warranty is for real!"
"Martha told me that buying an Elite System was the smartest thing she's ever done."
"Well, Albert and I just ordered an Elite for our grandson."

What's All The Gossip About?

Did you hear about Elite PCI and Pentium™ Systems from MidWest Micro? It's certainly no rumor that Intel's® Pentium processor operates twice as fast as a DX2-66 processor. Plus, superscalar architecture lets it execute two instructions at the same time, dramatically speeding up operation. For such high performance, the price of Elite Systems is very trim.

Pssst...Pass It On

Superior compatibility, automatic configuration and high-speed data handling are making PCI (Peripheral Component Interconnect) Local Bus the talk of the town. Since these systems are self-configuring, adding network cards, video cards and other peripherals has never been easier. (Just ask Martha!)

intel inside pentium PROCESSOR

Seagate

WINDOWS FOR WORKGROUPS

Another highlight of PCI Technology is great video performance. It gives you up to 16.7 million colors (that won't wash out after you shampoo) and 1280 x 1024 resolution. And with refresh rates up to 90 Hz, screens redraw faster than you can say split ends!

What Else Is New?

What's new? Elite's new line of Pentium Systems travel at an amazing 90 MHz processing speed, one of the fastest speeds available. Known as P5-90s, these Elites also run cooler and draw significantly less power. If you want to make some permanent waves, order an Elite P5-90 Pentium System from MidWest Micro.

Wait, There's More...

The curling iron isn't all that's hot – so are Elite DX4 VESA Systems! We're talking processing speeds up to 75 and 100 MHz! News hasn't traveled this fast since the grapevine was invented! Plus, with a powerful VESA Local Bus, you get increased throughput and high-speed video.

MidWest Micro's Intel-based Systems give you more than high speed and excellent performance. They also come with large hard drives and MS-DOS 6.2® and WFW™ 3.11 installed. Some configurations even include a double speed multimedia CD-ROM drive and an internal send and receive fax modem! Call the company that everybody's talking about – call MidWest Micro today.

Pentium technology is a lot more than just small talk. It can execute two instructions at once, produce processing speeds up to 90 MHz and make everyday applications run even better. Pentium processors also provide the power needed for new multimedia applications and desktop video conferencing.

And if clock-tripling VESA performance dominates your conversations, you need an Elite DX4 VESA System. With a powerful VESA Local Bus, fast processing speed and double-speed CD-ROM drive, this System never makes you wait! If you'd like to talk more about Elite DX4 and Pentium Systems, call one of the friendly sales representatives at MidWest Micro – they love to talk, too!

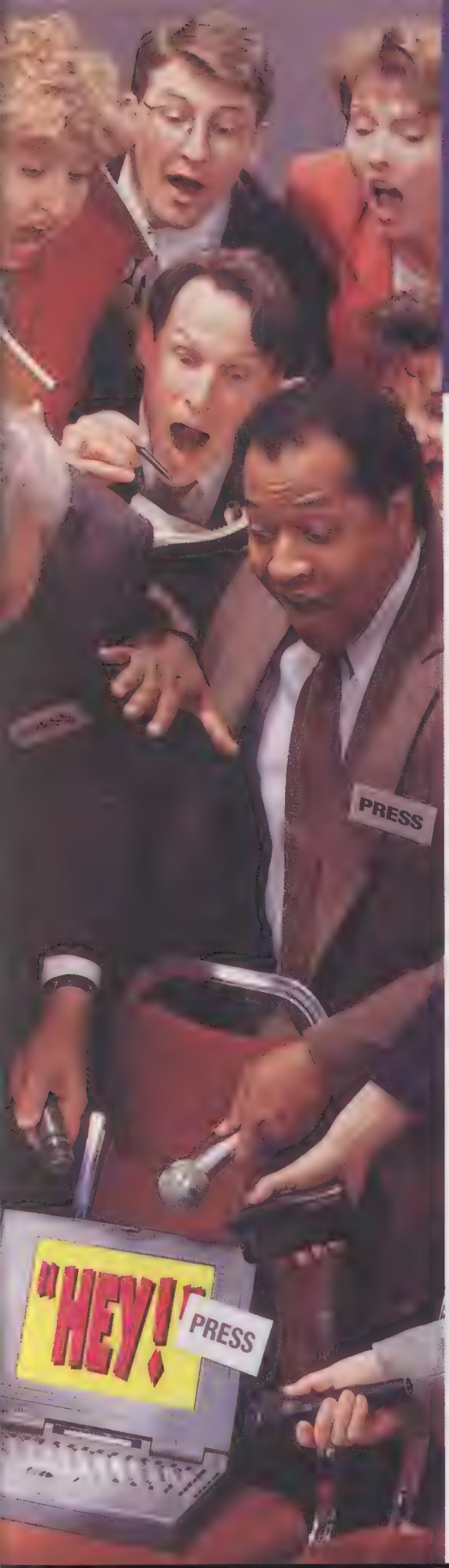
MidWest Micro

1-800-682-7248

AD#M701

Circle 237 on reader service card.

"At the top [illegible] the
[illegible] certainly lives up to
its name. [illegible] display is well
[illegible] by its enhanced, high performance chip,
[illegible] and quality assembly. When you add
to that its [illegible] life and toll-free support, at a
[illegible] price, the [illegible] is the class of this field."
Computer Shopper, May 1994



THE ELITE SOUNDBOOK STEALS THE SPOTLIGHT

This Notebook's Got Something To Say

There's simply no better way to get the word out than with the Elite SoundBook from MidWest Micro. Featuring built-in audio capabilities and the processor, hard drive and screen of choice, the Elite SoundBook is always attracting attention (even when it's not supposed to)!

It Can't Keep Quiet!

It's hard for the SoundBook to keep quiet since it comes with a built-in microphone and speaker, external jacks and bundled audio software. The software lets you easily record, compress, store and playback voices, sounds or music. Plus, the Elite features a PCMCIA Type III slot so you can add modems, flash memory, network adapters, and more.

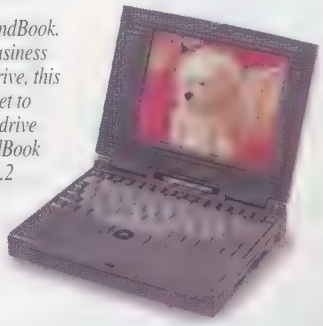
Attracting Attention From Every Angle

The SoundBook also attracts attention with its visual performance. Available in monochrome, dual-scan color and active-matrix color, these screens make presentations look great .

A Keynote Speaker

Even when it's part of the audience, the Elite SoundBook steals the spotlight. Business presentations have never looked or sounded so good! And it comes in a variety of configurations, so you can pick the one that best suits your needs. You can even select a processor with a clock-tripling 100 MHz processing speed! With its long battery life, up to 520 Mb hard drive and local bus video with 1 Mb video DRAM, this lightweight notebook really makes a statement. Invite the Elite SoundBook to your next press conference. It won't just be the topic of discussion—it'll be the main speaker!

The media can't stay away from the Elite SoundBook. With 4 Mb of RAM (expandable to 20 Mb), business audio features and a user replaceable hard drive, this notebook is hot news! And the fact that you get to choose your own processor, screen and hard drive has really got reporters interested. The SoundBook even comes with Lotus Organizer, MS-DOS 6.2 and WFW 3.11 installed. Whether you'd like the color (6.7 lbs.) or monochrome (6.2 lbs.) version, the Elite SoundBook steals the show.



News On a Lighter Note

Ready for more good news? The Elite 486SX-33 SubNote weighs only 3.9 lbs. and comes with a dual-scan color or monochrome screen. With its high-speed RAM and fast processor, this SubNote really beats the press! If you like the lighter side of the news, you're going to love the Elite 486SX-33 SubNote.

MidWest Micro

1-800-682-7248

AD#M702

Circle 271 on reader service card.

PENTIUM PCI SYSTEMS

P5-60 $2299

#007830

- Intel® 60 MHz Pentium™ Processor
- 8 Mb RAM, 256 Kb Cache
- 340 Mb IDE Hard Drive
- PCI Fast IDE Interface
- PCI Local Bus Graphics
- 3.5" Disk Drive
- 15" SVGA .28 N/I Multi-Scan Color Monitor with Hitachi CRT
- 8-Bay Middle-Tower Case
- 4 ISA, 2 PCI &1 PCI/ISA Slots
- 101-Key Enhanced Keyboard
- MS Mouse
- MS-DOS™ 6.2 and WFW™ 3.11

P5-66 $2699

#007831

- Intel 66 MHz Pentium Processor
- 8 Mb RAM, 256 Kb Cache
- 528 Mb IDE Hard Drive
- PCI Fast IDE Interface
- PCI Local Bus Graphics with 2 Mb
- Double Speed CD-ROM Drive
- Internal 14.4 S/R Fax Modem
- 3.5" Disk Drive
- 15" SVGA .28 N/I Multi-Scan Color Monitor with Hitachi CRT
- 8-Bay Middle-Tower Case
- 4 ISA, 2 PCI & 1 PCI/ISA Slots
- 101-Key Enhanced Keyboard
- MS Mouse
- MS-DOS 6.2 and WFW 3.11

P5-66 $2999

#007832

With 1 Gb SCSI HDD & Without 14.4 Internal S/R Fax Modem

P5-66 $3199

#007833

- Intel 66 MHz Pentium Processor
- 16 Mb RAM, 256 Kb Cache
- 528 Mb IDE Hard Drive
- PCI Fast IDE Interface
- PCI Local Bus Graphics with 2 Mb
- Double Speed CD-ROM Drive
- Microsoft 3 Disk CD-ROM Software Library – Encarta, Works & Money
- Pro Audio 16 Sound Card
- Digital Quality, Compact Speakers
- Internal 14.4 S/R Fax Modem
- 3.5" Disk Drive
- 15" SVGA .28 N/I Multi-Scan Color Monitor with Hitachi CRT
- 8-Bay Middle-Tower Case
- 3 ISA, 2 PCI & 1 PCI/ISA Slots
- 101-Key Enhanced Keyboard
- MS Mouse
- MS-DOS 6.2 and WFW 3.11

P5-90 $3499

#007834

- Intel 90 MHz Pentium Processor
- 16 Mb RAM, 256 Kb Cache
- 528 Mb IDE Hard Drive
- PCI Fast IDE Interface
- PCI Local Bus Graphics with 2 Mb
- Double Speed CD-ROM Drive
- Internal 14.4 S/R Fax Modem
- 3.5" Disk Drive
- 17" SVGA .26 N/I Color Monitor with Hitachi CRT
- 10-Bay Full-Tower Case
- 3 ISA, 2 PCI & 1 PCI/ISA Slots
- 101-Key Enhanced Keyboard
- MS Mouse
- MS-DOS 6.2 and WFW 3.11

P5-90 $3999

#007835

With 1 Gb SCSI HDD

VESA AND PCI SYSTEMS

486SX-33 $1199

#006674

- Intel 486SX-33 Processor
- 4 Mb RAM, 128 Kb Cache
- 340 Mb IDE Hard Drive
- 32-Bit VESA Local Bus Graphics with 1 Mb
- 32-Bit VESA Local Bus IDE
- 3.5" and 5.25" Disk Drives
- 14" SVGA .28 N/I Color Monitor with Hitachi CRT
- 8-Bay Mini-Tower Case
- 5 ISA & 3 VESA/ISA Slots
- 101-Key Enhanced Keyboard
- MS Mouse
- MS-DOS 6.2 and WFW 3.11

486DX-33 $1379

#006675

486DX2-50 $1399

#006676

486DX2-66 $1799

#006677

- Intel 486DX2-66 Processor
- 8 Mb RAM, 128 Kb Cache
- 340 Mb IDE Hard Drive
- 32-Bit VESA Local Bus Graphics with 1 Mb
- 32-Bit VESA Local Bus IDE
- Double Speed CD-ROM Drive
- 3.5" Disk Drive
- 15" SVGA .28 N/I Multi-Scan Color Monitor with Hitachi CRT
- 8-Bay Mini-Tower Case
- 5 ISA & 3 VESA/ISA Slots
- 101-Key Enhanced Keyboard
- MS Mouse
- MS-DOS 6.2 and WFW 3.11

486DX-33 $1679

#007808

486DX2-50 $1699

#007809

DX4-75 $2399

#007826

- Intel DX4-75 Processor
- 16 Mb RAM, 128 Kb Cache
- 452 Mb IDE Hard Drive
- 32-Bit VESA Local Bus Graphics with 2 Mb
- 32-Bit VESA Local Bus IDE
- Double Speed CD-ROM Drive
- 3.5" Disk Drive
- 15" SVGA .28 N/I Multi-Scan Color Monitor with Hitachi CRT
- 8-Bay Mini-Tower Case
- 5 ISA & 3 VESA/ISA Slots
- 101-Key Enhanced Keyboard
- MS Mouse
- MS-DOS 6.2 and WFW 3.11

486DX2-66 $2299

#007827

DX4-100 $2499

#007828

DX4-100 PCI $2999

#007829

- Intel DX4-100 Processor
- 16 Mb RAM, 128 Kb Cache
- 528 Mb IDE Hard Drive
- PCI Local Bus Graphics with 2 Mb
- Double Speed CD-ROM Drive
- 3.5" Disk Drive
- 17" SVGA .26 N/I Color Monitor with Hitachi CRT
- 8-Bay Middle-Tower Case
- 3 ISA, 2 PCI & 1 PCI/ISA Slots
- 101-Key Enhanced Keyboard
- MS Mouse
- MS-DOS 6.2 and WFW 3.11

SLIMLINE VALUE SYSTEMS

HOME PC 486DX2-66 $1799

#007825

- Intel® 486DX2-66 Processor
- 4 Mb RAM, 128 Kb Cache
- 250 Mb IDE Hard Drive
- 32-Bit Local Bus Graphics with 1 Mb
- 32-Bit Local Bus IDE
- Double Speed CD-ROM Drive
- Microsoft 3 Disk CD-ROM Software Library – Encarta™, Works™ & Money™
- Pro Audio 16 Sound Card
- Digital Quality, Compact Speakers
- 9624 Internal S/R Fax Modem
- 3.5" Disk Drive
- 15" SVGA .28 N/I Multi-Scan Color Monitor with Hitachi CRT
- Slimline Case
- 4 ISA & 1 VESA/ISA Slots
- 101-Key Enhanced Keyboard
- MS Mouse
- MS-DOS 6.2 and WFW 3.11

SERVICES

Every MidWest Micro Elite is backed by:

- Three-Year "Real Warranty" on desktops
- One-Year Warranty on portables
- 30-Day Money Back Guarantee
- Immediate Parts Replacement Policy
- Lifetime Toll-Free Technical Support
- On-Line Bulletin Board Service

MONITOR UPGRADE

Ask your sales representative how you can upgrade your monitor to a 15" or 17" Elite monitor.

14" to 15" $89
14" to 17" $419
15" to 17" $319

ELITE NOTEBOOKS

ELITE SoundBook

- Intel® 486, DX2 or DX4 Processor
- 4 Mb RAM (expands to 20 Mb)
- 9.5" Mono, 10.3" Dual-Scan or 9.5" Active Matrix VGA Display
- Local Bus Video with 1 Mb Video DRAM
- Business Audio Features Including: Built-in Microphone & Speaker External Jacks for Line In & Line Out
- 3.5" Built-in Disk Drive
- User Replaceable Hard Drive
- Two Type II/One Type III PCMCIA Slot
- Built-in Trackball
- NiMH Battery & AC Adapter
- Advanced Power Management with SMI
- One Parallel & One Serial Port
- External VGA & Keyboard Port
- MS-DOS™ 6.2 & WFW™ 3.11
- Lotus Organizer™
- Weight: Mono – 6.2 lbs. Color – 6.7 lbs.
- Carrying Case

Dual Scan Color SoundBook

486SX-33 with 260 Mb HDD
#007328 **$1999**

486DX-33 with 260 Mb HDD
#007329 **$2199**

DX2-50 with 340 Mb HDD
#007330 **$2299**

DX2-66 with 520 Mb HDD
#007331 **$2499**

DX4-75 with 340 Mb HDD & 8 Mb of RAM
#007332 **$2799**

DX4-100 with 520 Mb HDD & 8 Mb of RAM
#007333 **$2999**

Monochrome SoundBook

486SX-33 with 260 Mb HDD
#007334 **$1499**

486DX-33 with 260 Mb HDD
#007335 **$1699**

DX2-50 with 340 Mb HDD
#007336 **$1799**

Active Matrix SoundBook

DX2-66 with 340 Mb HDD & 8 Mb of RAM
#007337 **$3499**

DX4-75 with 520 Mb HDD & 8 Mb of RAM
#007338 **$3799**

DX4-100 with 520 Mb HDD, 8 Mb of RAM & PCMCIA 9624 S/R Fax Modem
#007339 **$3999**

Options

4 Mb RAM Card	#005976	$219
8 Mb RAM Card	#005977	$469
16 Mb RAM Card	#005978	CALL
Car Adapter	#005979	$ 59
PCMCIA 9624 Fax Modem	#001722	$149
PCMCIA 14.4 Fax Modem	#001812	$229
PCMCIA Ethernet Adapter	#001832	$159

* Ask your MidWest Micro sales representative about additional hard drive, screen and processor options.

Elite 486SX SubNote

- Intel 486SX SL-Enhanced Processor
- 4 Mb RAM (expands to 12 Mb)
- 9.5" Mono or Dual-Scan VGA Display
- Turbo Bus Accelerated Video
- 3.5" External Disk Drive
- User Replaceable Hard Drive
- One Type II PCMCIA Slot
- Built-in Trackball
- NiMH Battery & AC Adapter
- Advanced Power Management with SMM
- One Parallel & One Serial Port
- External VGA & Keyboard Port
- MS-DOS 6.2
- Weight: 3.9 lbs.
- Carrying Case

Monochrome SubNote

486SX-25 with 260 Mb HDD
#007342 **$1299**

486SX-25 with 340 Mb HDD & PCMCIA 9624 S/R Fax Modem
#007307 **$1499**

Dual Scan Color SubNote

486SX-33 with 260 Mb HDD & WFW 3.11
#007340 **$1899**

486SX-33 with 340 Mb HDD & WFW 3.11
#007341 **$1999**

Options

4 Mb RAM Card	#005970	$219	PCMCIA 9624 Fax Modem	#001722	$149
8 Mb RAM Card	#005971	$469	PCMCIA 14.4 Fax Modem	#001812	$229
Car Adapter	#005972	$ 65	PCMCIA Ethernet Adapter	#001832	$159

energy EPA POLLUTION PREVENTER

Seagate

NEW Microsoft WINDOWS FOR WORKGROUPS

The Real 3 YEAR Warranty

MidWest Micro
6910 U.S. Route 36 East, Fletcher, Ohio 45326
1-800-682-7248
Fax: 1-800-562-6622
Monday-Friday: 9 a.m. to 7 p.m. Saturday: 10 a.m. to 4 p.m.

MasterCard VISA DISCOVER

For your protection we check thoroughly for stolen credit cards.

Technical Support:
1-800-262-6622
Customer Service:
1-800-728-8584
Dealers Call:
1-800-682-4711

Disclaimer: The Intel Inside Logo, Intel, Pentium and OverDrive are registered trademarks of the Intel Corporation. Seagate and the Seagate Logo are registered trademarks of Seagate Technology. The Energy Star emblem does not represent EPA endorsement of any product or service. All products are trademarks of their respective manufacturers. All registered and unregistered trademarks are the soleproperty of their respective companies.

Call or write for your Free MidWest Micro catalog.

Policy: No service charge for credit card orders. Prices are subject to change. Repair or replacement of defective products is at MidWest Micro's discretion. We are not responsible for errors in typography and photography. Original shipping and handling fees, as well as return shipping charges, are non-refundable. There are no returns for credit after 30 days. Call or write MidWest Micro for more information on warranties and policies.

AD#M703

Circle 273 on reader service card.

WE WILL TRY TO MATCH OR BEAT ANY ADVERTISED PRICE. CALL FOR LATEST PRICING!!

WE ACCEPT PO'S FROM QUALIFIED FIRMS

M E M O R Y

NO SURCHARGE FOR MC, VISA AE & DISCOVER

CACHE MEMORY

	12NS	15NS	20NS	25NS
8Kx8		6 50	6 00	5.50
32Kx8	19 00	9 00	8 00	7 00
64Kx1	–	11 00	9 00	8.00
64Kx4	–	11 00	9.00	8.00
16Kx4		8 00	7 00	6 00
128Kx8		–	39 00	29 00

D-RAM Chips

MEMORY FOR IBM & APPLE

	45NS	60NS	70NS	80NS	100NS
1Megx1		7 35	7 25	6 75	5 95
1Megx4		35 00	29 00	27 00	
1Megx4 (Zip Pk)		27 00	25 00	23 00	–
256 x 4 (Video Zip)	–		15 95	11 95	10.95
256x4	8 95	7 95	6 95	–	-
256 x1		4 00	3 50	3 00	2 75
256 x16VRAM–		–	39 00	39 00	–
64x4	–	–		3 25	–
64x1		–	–		2 00

INTEL Math Chips

8087	39 00
8087-2	45.00
8087-1	79 00
80287-XL	49 00
80387-16 DX	39 00
80387-20 DX	44 00
80387-DX (Does All)	74 00
80487-SX (Does All)	299.00
Intel SX (Does All)	69 00
Intel SL Mobil	69 00
Intel 16SX	39 00
Intel 20SX	49 00

AMBRA

Ambra Pentium-60	4/8/16 Meg	175 00/339 00/699 00
Ambra S4540SL	4/16 Meg Kit	CALL
Ambra Sprinta 386, Hurdla 386SX, Enterprise 386 Slim	2/8 Meg Kit	CALL
Ambra Sprinta Hurdla & Enterprise 486	4/16 Meg Kit	CALL
Ambra NC 425SL	2/4/8 Meg	109.00/209 00/449 00
Ambra N Series	4/8/12/16 Meg	189 00/379.00/569 00/829 00
Ambra SN Series	4/16 Meg	189 00/829 00

CYRIX DRx² 386 to 486 Upgrade

- Single chip upgrade solution
- Clock doubling technology
- Compatible with industry standard 386DX CPU socket
- Compatible with DOS, Windows, 3:X, OS/2 1.3 and 2.x
- Uses industry standard math chip
- Easy to install—about 15 minutes

The Cyrix upgrade runs at twice the speed of your original 386 microprocessor combined with a 1K on-chip cache you will enjoy a performance boost of 100% and more Ideal for any DOS, Windows or OS/2 application which requires a large amount of microprocessor horsepower

CX486 DRx²-16/32	269 00
CX486 DRx²-20/40	279.00
CX486 DRx²-25/50	319 00
CX486 DRx²-33/66	359 00
CX486 SRX2 16/32	249.00
CX486 SRX2 20/40	249.00
CX486 SRX2 25/50	279 00

SIMM MODULES (Add $5.00 for SIPP)

	40NS	50NS	60NS	70NS	80NS	100NS
1Meg x 9 (3 chip)	54 00	52.00	45 00	44 00	42 00	-
1Meg x 9 (9 chip)	54 00	–	48 00	47 00	46 00	40 00
4Meg x 9	–	–	179 00	177 00	168.00	–
16Meg x 9 (9 chip)	–	–	–	719.00	–	–

72 PIN SIMMS (EISA)

1 x 32 4Meg	–	–	189 00	169 00	169 00	–
2 x 32 8Meg			349 00	329 00	329 00	-
4 x 32 16Meg	–	–	659 00	639.00	639.00	–
256 x 36 1Meg	-	-	–	–	59 00	–
512 x 36 2Meg	-			94 00	89 00	-
1 x 36 4Meg	–	–	189.00	179.00	168.00	–
2 x 36 8Meg	–	–	379 00	345 00	340 00	–
4 x 36 16Meg	–	–	719 00	689 00	689 00	–
8 x 36 32Meg	–	–	1539 00	1499 00	1499 00	–
16 x 36 64Meg		-	3629 00	3509 00	-	–

CYRIX FASMATH PROCESSOR

Programs executed up to 3X faster • Plug & object code compat w/Intel

83D87-40MHz - **79.00** 83D87-33MHz **59.00** 83S87 25SX Ver - **69.00**

83S87-33SX – **79 00** **PC Week™** rated #1 over all math chips

5 Year Warranty • "All Downward Compatible"

AST MEMORY

MODEL	AMT UPGRADED	AST PART #		PRICE
Bravo LC 4/25S, 4/33. 433S, 4/50d 4/66d	2Meg	500987-001	72 pin	CALL
	4Meg	500987-002	72 pin	179 00
	8Meg	500987-003	72 pin	419 00
	16Meg	500987-004	72 pin	619.00
	32Meg	500987 005	72 pin	1399.00
Premium 486/25 25E 33 33E; Premium 386/33TE 486/25TE 33TE; Prem Serv Prem 386SX/20, 25; Prem 386/25 386/33 486/33 486SX/20	8Meg	500780-001	64 pin	398 00
Premium 386 33T Prem 386SX/16; Prem 386SX/20 25		500780-004	64 pin	189 00
Premium 386/25 33 386/33T 386SX/16		500780-003	64 pin	59 00
Prem II 386SX20 25		500780-001	64 pin	59 00
Premia 4/33S 4/33 4/50D 4/66D	8Meg	501159-002		379 00
Premia	16Meg	501159-003		789.00
Premia	32Meg	501159-004		1469 00
Premia	64Meg	501159-005		3111 00
AST Cupid Bd	0–64Meg	500818-001		179 00

ZENITH MEMORY MODULES

MODEL	AMT. UPGRADED	AST PART #	PRICE
Z386/33 25, 20 33E	1Meg	ZA3800ME	59.00
Z386.33, 25, 20 33E, 486/25E	4Meg	ZA3800MK	180 00
Z386SX	2Meg	Z 605 1 modules	119 00

MAGNAVOX

286/386SX 16 386SX 20 486SX-20 & 386-33 *all are 72PIN SIMM*

1MEG – 59 00 4MEG – 180 00 8MEG - 349 00 16MEG – 659 00

MEMORY BOARDS

IBM Compatibles & PS/2

USES SIMMS

BOCA AT PLUS

16 BIT MEMORY BD FOR 286, 386 AT • 0K-8Meg Bd 4 0 LIM Compat. • New 5 Yr Warr Convent , Expnd & Extnd Memory • Supports DOS, OS/2, LIM/EMS & EEMS • Versatile Split Memory Addressing • Operates w/CPU Speeds to 33 MHz • Supports Desqview, Multitask operations • ***Bd. made by Boca Research, AT plus***

0K – $84.00 2Meg – $159.00 4Meg – $239.00 8Meg – $399 00

BOCA XT 8 BIT BUS

• Expanded memory for XT • Lim 4 0 compat. 0-2Meg • Uses 256x1-100

0-K - **$99.00** 1Meg **$189.00** 2Meg – **$229.00**

IBM P/S2 32BIT EXPANSION BD.

0-16Meg, Ext -Expnd Memory Bd. for P/S2 70, 80, 90, Lim 4 0

0Meg	2Meg	4Meg	8Meg	16Meg
$139.00	**$238.00**	**$319.00**	**$499.00**	**$859.00**

PS/2 MCA 0-8MEG EXPANSION BD.

0-8Meg Extended and/or Expanded Memory for all IBM P/S2 Models 50 50Z, 60 55SX, 65SX, 16 Bit, 4 0 LIM Compat

0K – **119.00** 2Meg **199.00** 4Meg – **283.00** 8Meg – **449.00**

USES 1 X 9 SIMMS BOCA BR MC-80

CHANGE YOUR 286 TO A 486

- Features IBM® 486 SLC2 Processor, Clock Doubling (25/50 or 33/66), 16K of Internal Cache
- Simply Replaces existing 286 Processor' Installs in 15 minutes

286 (CPU)	PLCC (Type)	25/50 MHz	279 00
286 (CPU)	PGA (Type)	25/50 MHz	279 00
286 (CPU)	PLCC (Type)	33/66 MHz	369 00
286 (CPU)	PGA (Type)	33/66 MHz	369 00

IBM PS/1, PS/2 MEMORY MODULES

IBM PART NO.	WORKS WITH MODEL NO.	PRICE
30F5348 (512K)	30-286	37 00
30F5360 (2Meg)	30-286, 25-286, 50 MTHR BD.	104.00
6450375 (1Meg)	80-041	79.00
6450379 (2Meg)	80-111, 311-121, 321, 081, 161	84.00
6451060 (4Meg)	80-A21, A-61, 80-A31, 80-111, 80-311	189 00
6450604 (2Meg)	70-061, E61, 121 50Z, 55SX, 65SX, P-70, 55LS, 65LS X-Station 120 & 130, 35SX, 35LS, 40SX	89 00
6450608 (2Meg)	70-A21, A-61, B-21, B-61, 35SX, 35LS, 40SX, Val Pt 325T	90 00
78X8955 (128K)	25	35 00
34F2933 (4Meg)	35SX 40SX, 55SX, 65SX, 55LS, 65LS	175 00
87F9977 (4Meg)	55SX 55LS 65SX, 40SX, 35SX, 35LS	175 00
1057035 (512K)	P/S1-286	49 00
92F9935 (2Meg)	P/S1 & P/S1/386SX-2121	109 00
92F9694 (4Meg)	P/S1 & P/S1/386SX, Model-2121	189.00
6450902 (2Meg)	56, 57, 57SX,90, 95 P-75, 57SLC Value Point 77 486DX2, 486SX, SVR 85	90 00
6450128 (4Meg)	57SX 90, 95, P-75, 57SLC, 56, 56SLC, P/S1 386SX, Mod-2123, 2133, 2155, Val Pt 77, 486CS2, 486SX, SVR85 Value Point 77 486DX2, 486SX, SVR 85	175 00
6450129 (8Meg)	35SX, 40SX	339.00
6450130 (8Meg)	56, 57 57SX, 90, 95, P-75 57SLC Value Point 77 486DX2 486SX SVR 85	339 00

IBM NOTEBOOK & LAPTOP MEMORY

——— (4Meg)	Thinkpad 500	230 00
——— (8Meg)	Thinkpad 500	459 00
79F0999 (2Meg)	LX40, N33SX PS Note Thinkpad 710T	103 00
79F1000 (4Meg)	LX40, N33SX, PS Note, Tkpd 350 350c, 710T, PS Note 425	199 00
79F1001 (8Meg)	LX40, N33SX, PS Note, Thinkpad 710T	369 00
07G1826 (2Meg)	N51 (all)	103 00
07G1827 (4Meg)	N51 (all)	199 00
07G1828 (8Meg)	N51 (all)	419 00
07G1415 (4Meg)	Thinkpad 750, 750c	199 00
07G1416 (8Meg)	Thinkpad 750, 750c	389 00
66G0094 (16Meg)	Thinkpad 750, 750c	849 00
07G1420 (4Meg)	CL57LSX LpTp Thinkpad 700 700C, 720 720C	199 00
07G1421 (8Meg)	CL57LSX LpTp, Thinkpad 700 700C, 720 720C	389 00
60G0378 (8Meg)	Thinkpad 350, 350c, PS Note 425	359 00
60G0379 (16Meg)	Thinkpad 350, 350c, PS Note 425	669 00
92F8804 (2Meg)	N45SL	109 00

COMPAQ MEMORY MODULES

MODEL	AMT UPGRADED	CMPQ PART #	PRICE
DeskPro 386/33, 386/33L,	2Meg Module	115144 001	139 00
486/25, 486/33L,	8Meg Module	116561-001	429 00
486/50L, System Pro	32Meg Module	116568-001	1459 00
DeskPro 386/33L, 486/33L	(Exp Bd)	116569 001	279 00
DeskPro 386/25 386/20	1Meg Module	113131 001	79 00
	4Meg Module	113132 001	199 00
DeskPro 386S-16MHz	1Meg Exp Bd	113633 001	149 00
	4Meg Exp Bd	113634-001	279 00
	1Meg Module	113646-001	79 00
	4Meg Module	112534-001	199 00
DeskPro 386/20E	1Meg Exp Bd	113644-001	149 00
DeskPro 386/25E	4Meg Exp Bd	113645-001	279 00
	1Meg Module	113131 001	79 00
	4Meg Module	113132 001	219.00
DeskPro 286N, 386N,	1Meg Module	118688-001	59.00
386SX/20, 386/25M, 486/33M,	2Meg Module	118689-001	89 00
486S/25M, 486S/16M	4Meg Module	118690-001	169 00
Port. I Series 486C	8Meg Module	128877 001	389 00
M Series Exp Bd	0-64Meg	129160-001	189 00
DeskPro 386/16	1Meg Kit	108071-001	99 00
	4Meg Kit	108072-001	299 00
	1-2Meg Exp Bd	108069-001	239 00
	4-8Meg Exp Bd	108070 001	437 00
DeskPro 286	512K Kit	113012-001	49 00
DeskPro 5/60, 5/66M, 5/66M (ALL OF THESE MACHINES USE THESE MODULES)	8Meg Kit	149911-001	389 00
Prosignia 5/60	16Meg Kit	149949-001	707 00
Proliant 100 5/60	32Meg Kit	149912-001	1399 00
Proliant 2000 4/30, 5/66	64Meg Kit	149913-001	2700 00
Proliant 4000 4/50, 5/66	128Meg Kit	149914-001	5900 00
Prolinea 386 3/25S, 3/252S	2Meg	141738-001	109 00
	8Meg	141742 001	338 00
Prolinea 486 4/25S, 4/33, 4/50, 4/66, CDS	2Meg	141683-001	95 00
Prosario series	4Meg	141684 001	175 00
	8Meg	141685-001	339 00
Prosignia PC Server, 486/33,	8Meg	141685-001	339 00
486 DSX/66	16Meg	149320-001	699 00
	32Meg	149147 001	1525 00

COMPAQ LAPTOPS & NOTEBOOKS

LTE/286	2Meg Bd	117081 002	99 00
LTE/286	4Meg Bd	117081-003	179 00
LTE/386S/20	4Meg Module	121125 002	209 00
LTE LITE/20, 25, 25C	4Meg Module	129769-002	209 00
LTE LITE/20, 25, 25C	8Meg Module	129769-003	419 00
LTE LITE/20, 25, 25C	16Meg Module	129769 004	809 00
LTE LITE 4/25C, 4/23E, 433C	4Meg Module	142337-002	179 00
LTE LITE 4/25C, 4/23E, 433C	8Meg Module	142337-003	349 00
LTE LITE 4/25C, 4/23E, 433C	16Meg Module	142337-004	774 00
SLT/286	1Meg Module	110235-001	75 00
SLT/286	4Meg Module	110237-001	249 00
SLT/386	1Meg Module	118303-001	79 00
SLT/386	2Meg Module	118304 001	109 00
SLT/386	4Meg Module	118305-001	219 00
Concerto, LTE Elite	4Meg	144790 001	199 00
	8Meg	144790-002	399 00
	16Meg	144790 003	809 00
Contura 320, 325	2Meg	139497-001	99 00
	4Meg	139498 001	179 00
	8Meg	139499-001	349 00
Contura 4/25, 4/25C, 4/25CX	4Meg	146520-001	179 00
	8Meg	146521-001	339 00
	16Meg	146531 001	759 00
Aero (3 3 volt)	4Meg	190532-001	219 00
	8Meg	190597 001	433 00

NO SURCHARGE FOR MASTERCARD AMEX, VISA OR DISCOVER PURCHASE ORDERS ACCEPTED FROM FORTUNE 2000 GOVERNMENT & INSTITUTIONS California orders add 8 25% sales tax. Returned orders or ordered wrong parts are subject to a 20% restocking fee (Memory chips not installed in boards.) We accept International orders shipped via UPS Air APO FPO orders welcome. Customers are expected to pay customs and "other charges if shipped Int'l All credit card charges verified for fraudulent use SORRY NO REFUNDS AFTER 30 DAYS – EXCHANGES ONLY We accept MC VISA, Discover AE prepaid orders purchase orders wire transfer COD (cashiers check) orders, cash & cashiers checks Orders shipped by UPS FEDX must be signed for • ALL MANFACTURER PART # S ARE FOR REFERENCE ONLY • MINIMUM ORDER $40 00

Price and availability subject to change without notice

CUSTOMER SERVICE & TECHNICAL: OPEN M–F, 9–4 PST

All products Brand new & guaranteed • We buy excess inventory

Trademarks are registered with their respective companies.

L.A. TRADE

22825 Lockness Avenue • Torrance, CA 90501

TOSHIBA LAPTOP MEMORY

MODEL	AMT. UPGRADED	MANU PART #	PRICE
T1000SE/XE/LE	2Meg	PC14-PA8312U	94 00
T2000/T2000SX	2Meg	PC18 PA8317U	94 00
T2000SX/T1000LE	4Meg	PC-PA8314U	189 00
T2000SX/T1000LE	8Meg	PC14-PA8315U	359 00
T2000SXE/2200SX/T1800, 1850, C	2Meg	PC PA2000U	94 00
T2000SXE/2200SX/T1800, 1850 C	4Meg	PC-PA2001U	189 00
T2000SXE/2200SX/T1800, 1850 C	8Meg	PC-PA2002U	359 00
T4400SX, SXC T6400, T6600	4Meg	PC PA2004U	199.00
T4400SX, SXC T6400, T6600	8Meg	PC-PA2005U	379 00
T4400SX, SXC T6400, T6600	16Meg	PC-PA2010U	699 00
T4500 C T4600 T4700 T1900 C T1910 T1950 (3.3 v	4Meg	PC-PA2012U	209 00
T4500. C T4600, T4700 T1900 C T1910, T1950 (3.3 v	8Meg	PC PA2013U	409 00
T4500. C T4600, T4700 T1900 C T1910 T1950 (3.3 v,	16Meg	PC-PA2014U	839 00
T3300SL	6Meg	PC PA2008U	268 00
T3300SL	16Meg	PC-PA2009U	699 00
T3400CT	4Meg	PC PA2019V	199 00
	8Meg	PC-PA2020V	399 00
	16Meg	PC-PA2021V	819 00
	32Meg		1599 00
T1200XE	2Meg	PC13-PA8306	99 00
T1600	2Meg	PC8-PA8302U	99 00
T3100	2Meg	PC3 PA7135E	139 00
T3100e	2Meg	PC9 PA8340U	109 00
T3100SX	2Meg	PC15-PA8308U	109 00
T3100SX	4Meg	PC15 PA8310U	199 00
T3200	3Meg	PC6-PA7137U	185 00
T3200SX	2Meg	PC12 PA8307U	119 00
T3200SX	4Meg	PC12 PA8909	199 00
T3200SXC	2Meg	PC19 PA8318U	119 00
T3200SXC	4Meg	PC19 PA8319U	199 00
T5100	2Meg	PC7-PA8301U	95 00
T5200/T8500	2Meg	PC10 PA8304U	114 00
T5200/T8500	8Meg	PC10 PA8313U	419 00

NOTEBOOK, LAPTOP MEMORY

MODEL	AMT UPGRADED	MANU. PART #	PRICE
ACER 730	2Meg 4Meg 8Meg		109/209.449
ACER 750	4Meg/8Meg/16Meg		199.459/869
ALR Venture	4Meg	12407980	249.00
AST Bravo & Explorer	4Meg/16Meg	501255-001 -002	199 00/789 00
AST Notebook Prem Exec 386SX/20/25/25L	4Meg	500814-003	189 00
AST Power Exec 3/25C, 425EL	4Meg		199 00
AST Power Exec 3/25C, 425EL	16Meg		819 00
AST Power Exec 425SL	4Meg	501166-001	199 00
AST Power Exec 425SL	16Meg	501166-003	819 00
AST Power Exec 4/33SL	4Meg/16Meg	501318-001 002	194 00/769 00
AT&T Safari NSX/20	4Meg	PEC 37651	259 00
Bondwell B310, Plus	1Meg	23050-09100	109 00
Bondwell B310V SX	1Meg		109 00
Bondwell B310V SX	4Meg		229 00
Canon Innova 486	2Meg/4Meg/8Meg		109/209.449
Canon Notejet 486	4Meg/ 8 Meg		219 00.419 00
Chicony Ultra, Hyundai 386	4Meg		199 00
Epson NB3	4Meg	A808511	199 00
Everex Tempo LX, LX20, Carrier	2Meg	PCA 00053-0001	109 00
Gateway 2000 Nomad 425 DXL/SXL	4Meg/16Meg		199 00/1549 00
Gateway 2000 486 Hardbook	4Meg/16Meg		199 00/799 00
Goldstar GS520 386SX/16	4Meg	S386-4M	249 00
Grid 1720, 1750 1755	1Meg		49.00
Magnavox Metalis	1Meg/4Meg	286, 386SX	109 00/199 00
NEC Prospeed 286 386SX-16	1Meg	PC21-21	79.00
NEC Prospeed 286 386SX 16	4Meg	PC21-22	199.00
NEC Prospeed 386	2Meg	PC31-21	119 00
NEC Prospeed 386	8Meg	PC31-22	399 00
NEC Prospeed 386SX-20	1Meg	PC43 21	79 00
NEC Prospeed 386SX-20	4Meg	PC43 22	199 00
NEC Ultralite Versa	4 Meg/8Meg/16Meg/20Meg	OP4104	183/359/799/988
Packard Bell 386SX 286	1Meg 4Meg	286, 386SX	109/199
Panasonic CF170, CF270, CF370	1Meg	CF BA165	49 00
Panasonic CF380, CF480	2Meg/4Meg/6Meg		119/199/30/
Sanyo 17 18 NB	2Meg	MBC-NBMEM2	109 00
Sharp 6781 6881, 6785	2Meg 4Meg		109 00/199 00
Sharp PC-6220	1Meg	CE 621B	79 00
Tandon PC Brand, Dataworld	2Meg/8Meg	NB386SX 20	119 00/429 00
TI Travelmate 2000	1Meg	2568034-0001	79 00
TI Travelmate 3000	2Meg	2566996-1	84 00
TI 4000	4Meg/16Meg		199.00/1299 00
Tandy 1510, 2810, 3810	1Meg		49 00
Tandy 2820, 3820, 3830	2Meg/4Meg/6 Meg		119/199/309
Twinhead Altima, Compudyne 486SX, DX, Tandy 4860	4Meg, 16Meg		199 00/859 00
Ultra 486	2Meg 4Meg 6Meg		CALL
Zeos 386SX Notebook (not the + version)	2Meg		109 00
Zenith Master Sport 386SX	2Meg	ZA-300-1	114 00
Zenith Master Sport SL, SLE	2Meg	ZA-4-4	119 00
Zenith Super Sport 286, 286E	1Meg	ZA 180-66	99 00
286E SX	2Meg	ZA 180-64	149 00
SX Alpha	2Meg	ZA 180-86	149 00
SX Beta	2Meg	ZA 180 87	149 00
Zenith Z-Note 325L, LC	2Meg/8Meg	ZA3250-4/5	129 00.419 00
Zenith Z-Note 425LN LNC LNP	4/8, 16Meg		269/519/839

PCMCIA VERSION 2.0 (for Palmtop & Notebooks)

MODEL	PRICE	MODEL	PRICE
S-RAM Cards 1MEG	159 00	9600 9600 Data/Fax Modems	209 00
S-RAM Cards 2MEG	179 00	2400/9600 Data/Fax Modems	139 00
Card Pro (made by Data I/O)		Lan Ethernet (10 Base T)	219 00
Transfers data from PCMCIA card to		Visual Media (CD Rom Tape Dr)	279 00
desktop PC connects to a parallel port	269 00	Bus Toaster™ (High speed SCSI II)	299 00
14 400/14 400 Data/Fax Modems	239 00	Wavjammer™ (16 bit stereo sound card)	319
		105 Mg Type III Hard Drive	519 00

FLASH MEMORY 2 5Meg-299 00 5 Meg 389 00 10Meg 599 00 20Meg 999 00

(Flash Memory Cards appear to the host computer as a hard disk drive In a DOS environment your system will see the flash card much like an IDE hard disk drive and assign it a logical drive e g D) No battery to deal with. Also all capacities come with data compression software to double the amount of flash memory

LASER PRINTER MEMORY UPGRADES

AMOUNT UPGRADED	OK Bd	256k	1	2	3	3 5	4	5	6	8	16	32
Canon LBP4 Lite, 4plus	–	-	159	219	–	–	–	–	–	–	–	–
Epson 6000 Action Laser	–	–	–	139	–	–	229	–	–	–	–	–
Epson Action Laser II	–	–	89		228			367	–	–	–	–
Epson 8000	-	-	89	–	228	–	–	367	–	–	–	–
Epson 1000, 1500	–	–	–	*129**	–	–	*258**	–	*Call*			
HP 2, 2D-				109			189					
HP 3, 3D 3P, 2P 2P+	-	–		149		-	169	–	–	–	–	–
HP 4, 4M, 4SI 4SIMX, 4P, 4MP	–	–	–	89	–	–	169	–	–	349	-	
HP 4L			59									
HP 3SI		–	69				169	–	–	349	–	–
HP 4SI	–	–	–	69	–	–	169	–	–	349	–	–
HP Design Jet 600, 650	–	-	–	-		-	169	–		349		
HP Deskjet 500 500C 510, 550	–	55										
HP Deskjet 1200C 1200C/P	–	–	–	89	–	–	169	–	–	349	–	–
HP Paintjet XL300	109	–	–	-	–		289			469	837	
IBM Laser 4019, 4019E	–	–	–	–	–	169				-	–	–
IBM Laser 4029	–	–	–	–	–	–	169	–	–	–	–	–
IBM Laser 4039 4079		–		99			169			350		
NEC 90, 290			-	139	-	-	-	-	-	–	-	-
NEC 95, 97	–	–	–	99	–	–	–	–	–	–	–	–
Oki 400				89								
Oki 400 E			135	189			–	–	–	–	–	–
Oki 830 840	–	–	–	109			–					
Packard Bell PB 9500				139			227					-
Packard Bell 9815				180			299		–		–	–
Panasonic 4420/4450I	–	–	–	129	–	–	209	–	–	–	–	–
Panasonic 4410/4430				126			195					
Panasonic 4450	–	–	99	–	–	–	–	–	–	–	–	–
Panasonic 4400/5400	–	–	Cal	Call	–		Call	–				-
Panasonic 4440, 5410	–	–	Cal	Call			Call	–	–	–	–	-
Sharp 9400, 9460, 9600			Cal	Call			-	-	–	–	–	–
TI XL/PS17/PS35	–	–	55	–	–	–	–	–	–	–	–	–
TI Microwriter	–	–	79	159	-							

*IN STOCK

H.P. COMPATIBLE FONT CARTRIDGE

BAR CODES Bar Code Reader Fonts	99 00
DESKJET SOLUTION for Dkjt 500 & Plus 92 Fonts 4 5 pt-30 pt	99 00
IBM 4019, 4019E, FONT CARTRIDGE 209 Fonts, Turbo Card	105 00
TURBO 25 Comparable to Pacific Data's 25 CARTRIDGES IN ONE!™, 143 Fonts *(compat with Epson Action Laser II and all HP Printers except HP4)*	69 00
TURBOSCRIPT™ 109, 109 Scalable Fonts to Any Point Size HP2D 3 3D 3P, 2P 2P+	149 00
TURBOSCRIPT™ 109, 109 Scalable Fonts to Any Point Size HP2	179 00
TAX & FINANCE FOR IBM 4019, 4019E, 4029	139 00
TAX & FINANCE CARTRIDGE	84 00
OKI 400, 800 41 fonts 11 typestyles	169 00

310-539-0019
FAX: 310-539-5844

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

CALL TOLL FREE **1-800-433-3726** (US and Canada)

ESTAB. 1985

SORRY, NO WILL CALLS

Mon-Fri, 8:00 a.m. to 5:00 p.m. PST
Sat. 10:00 a.m. to 12:00 noon

PRICES MAY FLUCTUATE. CALL FOR LATEST PRICING!!

IBM COMPAQ TOSHIBA NEC hp

FLORIDA'S LARGEST AUTHORIZED DEALER FOR NOTEBOOK COMPUTERS

DIRECT!!

TOSHIBA
T3400 Portégé
AUTHORIZED DEALER
- 486SL/33
- 4 Meg Ram
- 120 Meg H D
- T 3400CT
- VGA Active Color
- IN STOCK

CALL

TOSHIBA
T1910/T1950CT
AUTHORIZED DEALER
- 486DX40/50 MHz
- 4 Meg Ram
- 120, 200, 320 Meg H.D.
- VGA Active Color
- T1950, T1950CS
- IN STOCK

CALL

NEW

COMPAQ
CONTURA AERO
AUTHORIZED DEALER
- 486/25
- 486/33
- 84,170,250Meg HD
- Mono or Color
- IN STOCK

CALL

NEW

NEC VERSA E
AUTHORIZED DEALER
- 486DX 50/75/100 MHz
- 4 Meg Ram
- VGA ACTIVE COLOR
- 209 Meg HD
- 340 Meg HD
- IN STOCK

CALL

HIGH END COMPUTERS
NAME BRANDS AST, PREMIA AND BRAVO

HEWLETT PACKARD
VECTRA VL 2, PENTIUM XP

NEC
IMAGE, POWERMATE READY

DIGITAL
PC XL, MTE, RISC ALPHA CHIP, LPTV

IBM
VALUE POINT 6384, MODEL 95

COMPAQ
DESKPRO XL AND XE PENTIUM PROLINEA

TOSHIBA
T4700CT
AUTHORIZED DEALER
- 486DX2/50
- 8 Meg Ram
- 200, 320 Meg H.D.
- VGA Active Color
- T 4700CS
- IN STOCK

CALL

NEW

TOSHIBA
T4800CT
- 486 DX4/75
- 8 Meg Ram
- 500 Meg H.D.
- VGA Active Color
- In Stock

CALL

COMPAQ
LTE ELITE 486/40, 50, 75MHz
AUTHORIZED DEALER
- 486DX40/50/75MHz
- 4 Meg Ram
- VGA ACTIVE MATRIX COLOR
- 340 Meg HD
- 510 Meg HD
- IN STOCK

CALL

NEW

EPSON
ACTION NOTE
AUTHORIZED DEALER
- 486SLC/50/75 MHz
- 4 Meg Ram
- 120 Meg
- 2400 Modem
- VGA Mono
- IN STOCK

CALL

AST
POWER EXEC COLOR/BRAVO
AUTHORIZED DEALER
- 486SL/33MHz/75MHz
- 200 Meg H.D.
- VGA ACTIVE MATRIX COLOR
- 4 Meg Ram
- 320 Meg H.D.
- IN STOCK

CALL

TEXAS INSTRUMENTS
MULTI MEDIA READY
ALL NOTEBOOKS IN STOCK
AUTHORIZED DEALER
- Travelmate TM 4000 M SX/25 Mono
- Travelmate TM 4000 M SX/25 Color
- Travelmate TM 4000 M SX/25 Active Color
- Travelmate TM 4000 M DX4/75 Active Color

CALL

IBM
THINKPAD 350C
- 486SL/25
- 4 Meg Ram
- VGA
- Color Display
- 125 Meg H.D.
- 250 Meg H.D.
- 350 Mono

CALL

IBM
THINKPAD 750CE
- 486DX2/50
- 170 Meg H.D.
- IN STOCK
- 340 Meg H.D.
- Active Color Display
- 750 CS

CALL

AUTHORIZED DEALER FOR:
• COMPAQ • ZENITH • AST • HEWLETT PACKARD
• EPSON • DIGITAL • TOSHIBA • NEC • TEXAS INSTRUMENTS
• PACKARD BELL

- TECH HOURS: MON-FRI 9-6; SAT 10-4
- COMPANY & GOVERNMENT PURCHASE ORDERS WELCOME
- NO CREDIT CARD SURCHARGE
- WE ACCEPT VISA, MASTERCARD, DISCOVER & AMERICAN EXPRESS
- WE ARE OPEN MON-FRI 9am-9pm; SATURDAY 10am-6pm; SUNDAY Closed

HEWLETT PACKARD
Authorized Dealer

CALL

- HP4L
- HP4SI
- HP4P
- HP4M
- HP4ML
- HP4
- HP520
- HP4MP
- HP100LX
- HP1200C
- HP560C
- HP4SiMX
- HP Fax 900
- HP Fax 950
- HP Deskjet 310
- HP Scanjet 2CX
- HP Scanjet 2P
- HP Designjet 650C
- HP Designjet 200
- HP Omnibook 425
- HP Omnibook 430

• NEW-HP4 + •

ATTENTION: Due to On-going Price Reductions of Notebook & Laptop Computers Call for Current Pricing & Availability

THE FOLLOWING ALSO APPLIES:
- ALL ITEMS CARRY A ONE YEAR WARRANTY
- 15-DAY RETURN POLICY
- ALL ITEMS RETURNED MUST INCLUDE ORIGINAL PACKAGING AND DOCUMENTATION
- NO RETURNS WITHOUT RMA NUMBER
- SHIPPING AND HANDLING NON REFUNDABLE
- ALL RETURNS SUBJECT TO A RE-STOCKING FEE
- NOT RESPONSIBLE FOR TYPOGRAPHICAL ERRORS
- SOFTWARE NOT RETURNABLE
- LASER PRINTERS NOT RETURNABLE

WHEN IN FLORIDA VISIT OUR 5000 SQ. FT. SHOWROOM

FOR TECH SUPPORT AND CUSTOMER SERVICE CALL (407) 394-3742 • FAX YOUR ORDER (407) 750-4261 • OUTSIDE USA (407) 394-4180

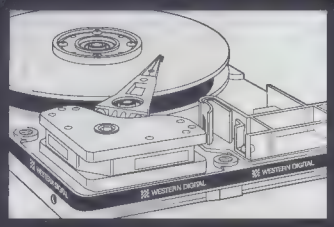
22191 POWERLINE RD., SUITE 148, BOCA RATON, FL 33433

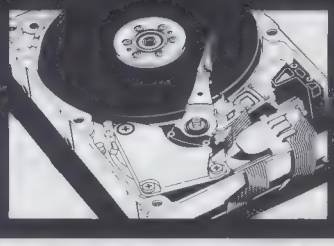
SUNSHINE COMPUTERS

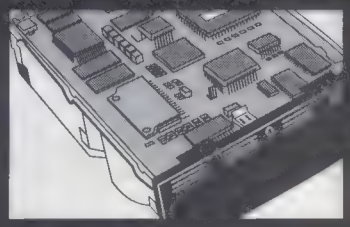
1-800-828-2992

MEGA HAUS HARD DRIVES

Your Drive Company!







UNEQUALED REPUTATION

Nobody knows drives like MegaHaus. We have specialized in storage solutions for over 8 years. Repeat business from satisfied customers is the backbone of our business. We satisfy our customers.

DIRECT REPLACEMENT WARRANTY

During the first year of your warranty, we replace: not repair, any defective items. All items receive lifetime technical support from our factory trained techs.

SAME DAY SHIPPING

Our multi-million dollar inventory offers you the best diversity and availability in the market. We ship most orders the same day. Each order is checked at least four times for accuracy.

FAST, EASY INSTALLATION

Anyone can sell you a hard drive. We sell easy to install storage solutions. We spend countless hours researching the best solutions, then create our quick precise installation guides for each kit.

MEGA BUNDLES

SAVE SOME SERIOUS BUCKS WITH OUR MEGA BUNDLES

IDE DRIVE BUNDLES

420MB Drive, GSI-21 accelerator card	$319
420MB Drive, Local Bus Cache card	$399
420MB Drive, GSI-21, 250MB Tape, 2 tapes	$479
540MB Drive, GSI-21 accelerator card	$429
540MB Drive, GSI-21, 250MB Tape, 2 tapes	$585
540MB Drive, Local Bus Cache card	$499
1Gig Drive, GSI-21 accelerator card	$759
1Gig Drive, GSI-21, 250MB Tape, 4 tapes	$899

SCSI DRIVE BUNDLES

1Gig Drive, 16Bit ISA	$829
1Gig Drive, Local Bus Cache Card	$1039
1Gig Drive, 2Gig DAT, 1 tape	$1569
1Gig Drive, 32Bit Local Bus	$889
1.7Gig Drive, 16Bit ISA	$929
1.7Gig Drive, Local Bus Cache Card	$1149
1.7Gig Drive, 2Gig DAT, 1 tape	$1789
1.7Gig Drive, 32Bit Local Bus	$1099

WIDE SCSI BUNDLES

1Gig Drive, 32Bit EISA, PCI or VLB card	$1269
2Gig Drive, 32Bit EISA, PCI or VLB card	$1969

SyQuest

3 1/2" Removable Media Drives. The #1 storage solution of the 1990's. Hard drive speed, low cost per MB. Mounts is 3 1/2" or 5 1/4" bay. Great for unlimited upgradability, data archival, etc 105MB 14.5ms, 64K buffer. 270MB 13.5ms, 128K buffer.

IDE Drive Bare 105 / 270	$239 / $409	SCSI Drive Bare 105 / 270	$279 / $429
with GSI-18 & 1 disk	$329 / $519	with Adaptec 1522 & 1 disk	$399 / $629
Portable external, attaches to		with Adaptec 1542 & 1 Disk	$529 / $759
printer port with 1 cartridge	$399 / $619	External for MacIntosh & 1 Disk	$399 / $629

gsi GSI drive accelerators increase the data transfer rate of your IDE drive 30 to 80%. Works by enabling the drives Read Multiple & Write Multiple commands to greatly increase performance. We highly recommend these products for WD, Conner, Quantum, Seagate, Micropolis, Maxtor, & Fujitsu.

	Alone	w/Drive
GSI-21 Board supports 2 IDE, 4 floppy drives. Doubles QIC-80 tape drive speed	$65	$55
GSI-18 Board supports 2 IDE drives. Works in conjunction with MFM, RLL, etc.	$55	$45
GSI-32 Board same as -21 adds 2 16550 serial ports & 1 bi-directional parallel port	$139	$119
GSI MaxIDEA Software solution works on existing IDE configuration (requires less than 1K of memory). Includes performance benchmark test.	$34	$25

HARD DRIVES

CONNER

IDE			
210MB	14ms	CFS210A	$202
340MB	13ms	CFA340A	$263
420MB	14ms	CFS420A	$275
541MB	12ms	CFA540A	$382
1060MB	9ms	CFP1060A	$749
SCSI			
1060MB	9ms	CFP1060S	$739

Maxtor

IDE			
245MB	15ms	7245A	$249
345MB	14ms	7345A	$259
540MB	12ms	7546A	$379

MICROPOLIS

IDE			
1050MB	10ms	MC4110A	$749
1740MB	10ms	MC2217A	$969
SCSI			
1052MB	8.5ms	MC4110	$749
1740MB	10ms	MC2217	$969
3020MB	11ms	MC1936	$1999
SCSI-AV Audio / Visual tuned drives			
1000MB	10ms	MC2210AV	$829
1700MB	10ms	MC2217AV	$1039
3000MB	11ms	MC1936AV	Call

Seagate

IDE			
213MB	16ms	ST3243A	$204
260MB	16ms	ST3290A	$219
341MB	13ms	ST3391A	$280
452MB	12ms	ST3550A	$295
SCSI (WIDE SCSI also available)			
1690MB	8ms	ST11950N	$1469
2145MB	8ms	ST12550N	$1639
2148MB	9ms	ST12400N	$1399

WESTERN DIGITAL

IDE			
270MB	12ms	AC1270	$229
341MB	12ms	AC2340	$259
425MB	12ms	AC2420	$275
540MB	11ms	AC2540	$379
730MB	10ms	AC2700	$559
1083MB	10ms	AC31000	$739

HARD DRIVES

Quantum

IDE			
170MB	14ms	LPS170A	$199
270MB	12ms	LPS270A	$229
342MB	12ms	LPS340A	$269
541MB	12ms	LPS540A	$379
SCSI			
170MB	14ms	LPS170S	$199
270MB	12ms	LPS270S	$245
342MB	12ms	LPS340S	$272
541MB	12ms	LPS540S	$399
1080MB	10ms	IMP1080	$739
1800MB	10ms	PD1800S	$939
2160MB	9.5ms	IMP2160S	Call

digital

2103MB	9ms	DSP3210	$1369
3500MB	11ms	DSP5350	$2469

IBM PS/1 PS/2 DRIVES

Complete solutions for your IBM. Larger sizes in stock!

	170MB	270MB	340MB
PS/1 386 & 486	$229	$279	$319
PS/2			
25, 30, 30-286	$269	$329	$389
35 & 40	$219	$269	$309
50 thru 95 SCSI	$369	$439	$489
PS/2	210MB	420MB	540MB
50 thru 95 IDE	$419	$589	$719

CONTROLLER CARDS

	Alone	w/Drive
ADAPTEC		
A1522BASIC 16Bit SCSI	$129	$109
A1542CBASIC 16Bit SCSI	$225	$215
A2742 EISA SCSI	$389	$369
A2842 VESA SCSI	$319	$299
FUTURE DOMAIN		
1680SVP 16Bit SCSI	$155	$139
NexStor PCI SCSI	$169	$149
ALPHA RESEARCH CACHING CARDS		
S425I 16Bit IDE	$99	$89
S475I 32Bit Local Bus IDE	$139	$129
S485I 32Bit PCI IDE	$229	$219
S425S 16Bit SCSI	$229	$219
S475S 32Bit Local Bus SCSI	$369	$359

Many other types of controllers in stock.

CD ROM DRIVES

NEC	CDR900	4X	180ms	$979
NEC	CDR510	3X	195ms	$389
Toshiba	XM3401	2X	200ms	$319
Toshiba	XM4101	2X	320ms	$219
Sony	CDU561	2X	295ms	$289
Teac	CD50	2X	265ms	$259

Pioneer External CD Changers (300ms)

DRM602X	6 disc	307KB/sec	$869
DRM604X	6 disc	612KB/sec	$1149
DRM1804X	18 disc	612KB/sec	$2059

MULTIMEDIA KITS

SCSI Drive, sound card (in retail pkg)
MV=Media Vision Pro Audio 16. MS=Media Vision Pro Studio 16
SB= Sound Blaster 16 SCSI. SA= Sound Blaster SCSI ASP.

	MV	MS	SB	SA
XM4101	$359	$389	$419	$459
CD50	$399	$429	$449	$489
CDU561	$429	$459	$469	$519
XM3401	$459	$489	$519	$559
CDR510	$509	$539	$579	$609
CDR900	$1119	$1149	$1159	$1199

CD ROM TOWERS

CD ROM Drive Towers - Multiple CD ROM drives in a single external enclosure. Great for networks, BBS, or business.

	2 Drive	4 Drive	7 Drive
XM4101	$579	$1259	$2249
CD50	$649	$1389	$2479
CDU561	$699	$1479	$2639
XM3401	$789	$1659	$2999
CDR510	$939	$1999	$3499
CDR900	$2119	$4339	$7489

BUNDLE SPECIALS WITH ANY CD DRIVE PURCHASE!

Free $25 ADI Photo CD processing coupon with each CD ROM Drive!
6 Title CD Bundle $69
Illustrated Encyclopedia, World Atlas, Mavis Beacon Teaches Typing, San Diego Zoo's Animals, US Atlas, Chessmaster 3000)
Caddies $5 Macintosh CD Driver $29
Altec Lansing ACS-100 Speakers $109

HARD DISK CARDS

Drive & controller on card. Saves drive bay. Compatible with XT, AT, Tandy, PS/2 and others. Super easy installation! IDE

170MB	$259	270MB	$319
340MB	$359	540MB	$499

TAPE DRIVES

IOMEGA

250MB QIC-80 tape drives include 5YR warranty, software, 1 tape

	Alone	w/drive
Internal fits 3.5 or 5.25 bay	$159	$149
External for printer port	$319	$309

3 Pack of IOMEGA formatted DC2120 tapes $40 with any purchase!

SCSI Tape Drives

Kit is 16Bit card & 1 tape			Bare	Kit
750-15Gig	Exabyte	2501	$549	$739
2Gig	Conner	4320	$799	$969
2Gig	HP	35470	$929	$1049
4-8Gig	Conner	4324	$1119	$1329
4-8Gig	HP	35480	$1059	$1279
4-16Gig	Sony	SDT5000	$1099	$1299
4-16Gig	HP	C1533A	$1499	$1699

OPTICAL DRIVES

Smart STORAGE SOLUTIONS

High quality, High Performance optical drive solutions include controller, and 1 disk.
Get "Dare to Compare" FAX

128MB $769 230MB $979 1300MB $2499
HP & Maxoptix drives & media in stock.
Verbatim Optical Media (Qty 5 price)
128MB / 650MB / 1.3Gig $35 / $77 / $105

MISCELLANEOUS

	Alone	w/HD
TEAC Floppy Drives		
Floppy 1.4 (1.2 + $9)	$45	$42
Floppy Combo 1.2 & 1.4	$115	$105
Maxtor 105MB PCMCIA drive	$429	
PCMCIA to SCSI adapter	$319	
Desktop Docking Module! Mounts in 5 1/4" drive bay. Allows you to use any PCMCIA in your desktop	$159	

MEGA HAUS HARD DRIVES
1110 NASA Rd 1 #306
Houston, Texas 77058

1-800-786-1187

Ad. Code # CA71 Sales Hours (Central Standard Time)
8am - 7pm Monday thru Friday 9am - 3pm Saturday
FAX (713) 333-3024 Local (713) 333-1910
We sell within the United States, its territories, and Canada (sorry no international orders)

VISA MasterCard DISCOVER AMERICAN EXPRESS

NO SURCHARGE
We accept Fortune 500 & Government bids & P.O.'s
We check for COD and Credit Card fraud!

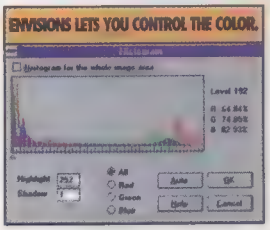
Prices & specifications subject to change without notice. Shipping charges are nonrefundable. Returns must be in new condition and in original packaging. Defaced items may not be returnable. No refunds on software or special order items not listed in ad.) All refunds subject to 15% restocking fee. All trademarks are registered trademarks of their respective companies. Personal checks take 4 weeks to clear. We reserve the right to refuse any sale for any reason. © 1994

Circle 105 on reader service card.

Envisions' Color Scanners Pack More Performance than Hewlett Packard's!

VS.

After evaluating a host of desktop scanners, *PC Computing* placed the Envisions ENV8100 right at the top of the list for best color scans. We beat HP and the rest of the pack by equipping our scanners with a superior dynamic range. This engineering feat gives you what few others can match: a more thorough color sampling of your image – for richer, more true-to-life output.



VS.

HEWLETT PACKARD DOESN'T.

Are We Missing Something?

Envisions puts you in precise control of color correction, even before you've finished scanning – by letting you preview an image's color values in a simple graph format. This makes it easier to "fine-tune" the Reds, Greens, and Blues in any area of your image, for true color-correcting capabilities that you probably thought were only available to you after the scanning process or from an image-editing program.

VS.

If you scan a photo from a magazine, newspaper, catalog – or scan any image that's been printed with a screen or dot pattern, Be Careful! If you aren't using an Envisions scanner, you might be in for some plug-ugly photos. Screening already-screened art can distort the look of your image, creating an undesirable "moiré" pattern. Our Descreening feature prevents this effect BEFORE you finish scanning, saving you lots of editing time later.

Scanner Model PART #	ENV6100 EST3081B	ENV8100 EST3083B	ENV24Pro EST3087B	HP ScanJet IIcx
Base Resolution Max. Resolution	300 x 600 dpi 1200 dpi	400 x 800 dpi 1600 dpi	600 x 1200 dpi 2400 dpi	400 x 400 dpi 1600 dpi
Color Recognition	16.7 million colors	16.7 million colors	16.7 million colors	16.7 million colors
Price	$499	$699	$999	$993*
Price/Performance Comparison	About Half the Price of the HP ScanJet IIcx	Judged Better Color than the HP ScanJet IIcx by PC Computing April, 1994	A Whopping 50% Higher Resolution than the HP ScanJet IIcx for the Same Price	You'll Spend More Money, but Get Less Performance

Envisions scanners are available bundled with Adobe Photoshop 2.5 or COREL Draw. For pricing information, call our toll-free number today.

The Evidence is *Positively* Overwhelming!

Space prohibits us from showing you all of the many important reasons why you'll choose an Envisions scanner over an HP. Call us today to receive a complete list of Envisions scanner benefits!

†Source: PC Computing, April 1994, comparison of the ENV8100 and the HP ScanJet IIcx™

*Average of 3 prices quoted by COMPUSA stores on 5/3/94.

©1994 Envisions Solutions Technology, Inc. All rights reserved and trademarks acknowledged. Prices and specs subject to change. Please call for system requirements.

ONLY AVAILABLE BY CALLING OUR SCANNER HOTLINE:

1-800-926-SCAN

QUESTIONS? WE LOVE QUESTIONS!℠ LOCAL 415-692-9061 FAX: 415-692-9064

TWAIN Compatibility

Celebrating 5 YEARS in Scanning

ENVISIONS

Scanner Solutions Made Easy

Index PRODUCTS FEATURED IN THIS ISSUE:

For free information on these products, circle the corresponding reader service number on the reply card on page 271.

To request information on all the products in one section, circle the corresponding reader service number on the reply card on page 271.

	PAGE	READER SERVICE
Super CPUs	118	801
Lotus Notes	138	802
dBASE	152	803
Direct 60	160	804

COMPUTER SYSTEMS

	PAGE	READER SERVICE
486-BASED SYSTEMS		
Deskpro XE 4100 M Compaq Computer	118	681
Dimension XPS 4100V Dell Computer	118	682
Image 4100es NEC Technologies	118	683
Pantera DX4-100 Zeos Int'l	118	684
BLUE LIGHTNING SYSTEMS		
Cougar EnergySmartPC BL3X/75 Alaris	118	685
NOTEBOOKS—COLOR		
Latitude 433C-170 Dell Computer	72	605
TravelMate 4000M Texas Instruments	72	606
TravelPro 5300 AMS	115	666
PENTIUM-BASED SYSTEMS		
Dimension XPS P90 Dell Computer	118	687
POWERPC-BASED SYSTEMS		
Power Macintosh 8100/80 AV Apple Computer	118	686

PERIPHERALS

	PAGE	READER SERVICE
AUDIO DEVICES		
Premium 3-D Media Vision	30	655
Sound Blaster AWE32 Creative Labs	306	783
Vivid 3D NuReality	30, 306	663
FAX SERVERS		
FaxPress 1000 Castelle	107	642
GRAPHICS ACCELERATOR CARDS		
Graphics Pro Turbo ATI Technologies	69	601
Number Nine #9GXE64 Pro Number Nine Computer	69	603
Stealth 64 Diamond Computer Systems	69	602
KEYBOARDS		
Floating Arms Keyboard Workplace Design	306	786
MONITORS—LARGE SCREEN		
Diamond Pro 21T Mitsubishi Electronics	306	785
NETWORKING		
Simply LANtastic Artisoft	105	641
PRINTERS—COLOR		
DeskJet 560C Hewlett-Packard	70	604
SPEAKERS		
Yamaha YST-M10 Yamaha	306	782
VIDEO CARDS		
928Movie VideoLogic	30	661

WINDOWS SOFTWARE

	PAGE	READER SERVICE
ACCOUNTING/PERSONAL FINANCE		
Managing Your Money MECA Software	87	624
CD-ROMs		
Bookshelf 1994 Edition Microsoft	309	771
Dennis Miller That's News to Me Sanctuary Woods	309	777
Exotic Garden VT Productions	309	778
Gus Goes to CyberTown Modern Media Ventures	309	775
In the Company of Whales Discovery Communications	309	779
Job Power Source Infobusiness	309	776
Millennium Auction Eidolon	309	774
Multimedia Encyclopedia of Science & Technology McGraw-Hill	309	773
RedShift Maris Multimedia	309	772
COMMUNICATIONS		
E-Mail Connection 2.0 ConnectSoft	92	625
DATABASES		
Approach 3.0 Lotus Development	75	620
dBASE Borland Int'l	152	696
FoxPro 2.6 Microsoft	157	695
DRAWING		
Dabbler Fractal Design	96	626
FONT UTILITIES		
Adobe Type Manager 3.0 Adobe Systems	30	652
Font Works ElseWare	30	653
GRAPHICS/PRESENTATION		
Visio Express for Microsoft Office Shapeware	102	632
GROUP PUBLISHING		
Envoy WordPerfect	98	623
GROUPWARE		
Notes Release 3 Lotus Development	138	690
INTERNET SERVICES		
NCSA Mosaic University of Illinois NCSA	113	643
MULTIMEDIA		
Multimedia ToolBook 3.0 Asymetrix	90	622
OPERATING SYSTEMS		
Windows 3.11 Microsoft	30	654
PERSONAL INFORMATION MANAGERS		
Ecco Professional 2.0 Arabesque Software	102	631
PRINT UTILITIES		
ColorSmart Hewlett-Packard	30	651
PROGRAM MANAGERS		
AST Works AST Research	30	636
UTILITIES		
Doc-To-Help WexTech Systems	186	766
RoboHelp Blue Sky Software	186	765
WORD PROCESSORS/TEXT UTILITIES		
Word 6.0 Microsoft	115	667

DOS SOFTWARE

	PAGE	READER SERVICE
GAMES		
Doom id Software	306	781
OPERATING SYSTEMS		
PC DOS 6.3 IBM	94	621

SERVICES

	PAGE	READER SERVICE
DIRECT SALES		
Acer Direct	161	700
Advanced Logic Research	161	701
Ambra Computer	161	702
Ares Microdevelopment	161	703
Arlington Computer Products	161	704
AT&T Direct	161	705
Austin Direct	161	706
Cables To Go	162	707
CAD Warehouse	162	708
Compaq DirectPlus	162	709
CompuAdd Computer	162	710
CompuClassics	162	711
CompUSA-Direct	162	712
ComputAbility Consumer Electronics	162	713
Computer Discount Warehouse	164	714
Computerware Direct	164	715
Comtrade	164	716
Cornell Computer Systems	164	717
DECdirect	164	718
Dell Computer	164	719
Dirt Cheap Drives	164	720
Drake Int'l	166	721
Dustin Discount Software	166	722
Empac Int'l	166	723
Envisions Solutions Technology	166	724
EPS Technologies	166	725
Epson Direct	166	—
First Source Int'l	166	727
Gateway 2000	168	728
Harmony Computers	168	729
Hi-Tech USA	168	730
IBM PC Direct	168	731
Inmac	168	732
Insight Direct	168	733
Keydata Int'l	168	734
Maximus Computers	171	735
MegaHaus	171	736
Micron Computer	171	737
MicroProfessionals	171	738
Micro Warehouse	171	739
Midwest Computer Works	171	740
MidWest Micro	171	741
NEC Select	174	742
Northgate Computer Systems	174	743
PCs Compleat	174	744
PC Connection	174	745
PC Zone	174	746
Publishing Perfection	174	747
Quantex Microsystems	174	748
Royal Electronics	176	749
Sager Midern Computer	176	750
Surplus Software Int'l	176	751
Swan Technologies	176	752
TC Computers/ Treasure Chest Peripherals	176	753
Tri-Star Computer	176	754
USA Flex	176	755
VTech Computers	178	756
Zenith Data Systems	178	757
Zenon Technology	178	758
Zeos Int'l	178	759

Advertiser Index

For free information on these advertisements, circle the corresponding reader service number on the reply card on page 271-272.

	READER SERVICE	PAGE NO.
Acer America	*	255-259
Advanced Logic Research	142	47
Altima	*	264
Ambra Computer Corporation	*	108-112
AMDEK	193	246
America Online, Inc.	*	169-170
American Power Conversion	116	24
Apple Computer	*	144-145
Arlington Computer Products	161	240
AST COMPUTER	*	20-21
AT&T Global Information	*	195-198
ATI Technologies Inc.	112	97
	113	99
Austin Hayne	165	308
Autodesk Retail	*	135
	*	187
Bondwell	109	239
Caere Corp	261	207
Canon Computer Systems, Inc.	*	189
Colorado Memory Systems	184	106
Compaq Computer	177	4-5
	164	65-67
Compuserve	128	114
Computability	143	234-235
Computer Discount Warehouse	130	267
	134	268-269
	133	270
Comtrade	147	265
Conner Peripherals	173	116-117
Corel Corp.	180	71
Corel Corp.	172	95
Creative Labs	135	311
DataViz	124	73
Dell Computer Corp.	*	175
	*	185
	*	C5-C8
Delphi Internet Services Corp.	239	211
Delrina Technology	167	25
	226	27
	227	177
Deneba Systems, Inc.	175	77
Diamond Computer	168	26
Digital Equipment Corporation	*	172-173
Duracell, Inc.	153	225
Eastman Kodak Company	247	22
	176	218
Envisions	*	285
Epson	*	12-13
First Source International	*	262
Galacticomm, Inc.	110	10
Gateway 2000	*	33-45
Hayes Microcomputer Products	152	63
IBM - PC DIRECT	*	78-86
IBM-Personal Software Products	*	133
IBM-Personal Software Products	*	61
IBM-PC Company	*	158-159
IDEK	179	205
INMAC	*	190
Innovation Computers	*	283
Insight	103	263
Intergraph Corporation	127	212
Intuit, Inc.	*	165
L.A. Trade	*	282
Lotus Development Corp	*	28-29
Lucas Arts	140	167
	141	219
Megahaus	105	284
Microcom	136	74
Microhelp	151	227
Microsoft	*	2-3
	*	16-17
	*	48-49
	*	180-181
Microtek Lab, Inc.	185	57
Midwest Computer Works	171	254
Midwest Micro-Peripherals	271	274-275
	237	276-277
	273	278-279
	276	280-281
Mitsumi Electronics Corp.	*	15
Motorola, Inc.	*	8-9
Nanao	212	179
NEC Technologies Inc.	219	C2-C4, 1
Nokia	*	11
Novell	123	193
Omnifax	132	266
Patton & Patton	224	220
PCs Compleat	148	247
	149	248-249
Philips Consumer Electronics	*	103-104
Plextor	266	163
QMS	*	209
Quantex	*	19
	*	241-245
Quarterdeck Office Systems	187	217
Relisys	144	215
Rose Electronics	169	213
SAGER	*	260-261
Spectrum Signal Processing	158	201
STAC Electronics	268	68
Supra Corporation	137	203
Symantec Corporation	122	55
Tektronix, Inc	121	121
Texas Instruments	*	129
	163	130-131
	155	137
The Complete PC	146	229
Toshiba America, Inc.	215	100-101
UMAX	257	221
USA Flex	202	237
US Robotics	102	191
ViewSonic	170	230
VTech Industries, Inc.	196	250-251
	196	252-253
WordPerfect Corporation	*	88-89
	*	91
	*	93
	*	150-151
Worldwide Technology	251	273
Zeos Int'l	265	51
	248	52-53
Ziff-Davis Press	*	18
	*	264

FYI

Direct to You Section	231-285
PC/Computing Marketplace	288-305

Marketplace

Advertising Account Representatives

Thomas Koletas	Southeast Territory	212-503-3674
Kevin Tracey	Northeast Territory	212-503-5102
Jonathan Schwartz	Northwest Territory	212-503-5101
Thomas Lee	Southwest Territory	212-503-5114
Erik Matlick	Midwest Territory	212-503-5142

National Advertising Staff 1-800-825-4237

Robert A. Bader VP, Central Advertising
Thomas Koletas Asst. Sales Manager
Bessi Dion Asst. Prod. Manager
Tricia Maguire Sr Ad Coordinator

Windows/Premier

The color showcase that puts the spotlight on leading-edge PC products and services.

288-298

Classified

Flexible-format display advertising: computer systems, components, software and more.

299-305

Featuring...

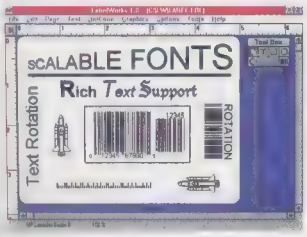
OS/2 290-291

Index

	Premier	Classified
HARDWARE		
Boards/Components/Chips	293	299
Communications	293	299
Voice Mail	293	
Computer Systems	293	299
Input/Output Devices	294	
Bar Coding		299
Mass Storage Devices	294	
Midi	294	
Networking		
On-Line Services		299
Security		
SOFTWARE		
Business Applications	294	299
Communications		
Education	295	300
Graphics/Design	295	300
Multi-media	296	300
Personal	296	
Foreign Languages	296	
Public Domain		301
Scientific		
Security		
Shareware		301
Systems/Languages		
Utilities	297	
Adult		303
Entertainment		
Windows		
SUPPORTING PRODUCTS		
Accessories		
Digital Output Services		301
Disk Duplication		301
Information Resources		301
Services		
Supplies	298	302

The Next Generation in Label Design Software

LabelWorks™ for Windows



LabelWorks sets the new performance standard for professional quality label design. No other program combines such easy operation with this much power!

- Provides Desktop Publishing features to enhance label design. Features include: WYSIWYG, rulers, guides, page zooms, lines, shapes.
- Rich text support allows you to edit font styles, types, and sizes within the same line.
- Supports all major Bar Code symbologies, including Code 39, 93, 128, POSTNET, UPC, Bookland EAN. 19 types in all.
- Imports & Exports using TIFF, GIF, BMP, PCX, WPG, WMF, TARGA graphic files.
- Rotates Text, Bar Codes and imported graphics in 90 degree increments.
- Prints labels on virtually any windows supported printer.
- Prints labels directly from dBase, DIF & ASCII files.

Dealer Inquiries Welcome.

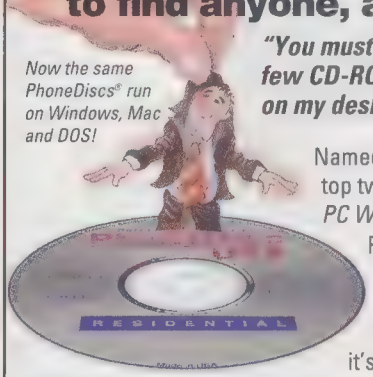
Call for Free DEMO Software

AMERICAN MICROSYSTEMS
2190 Regal Parkway, Euless, TX 76040
(800) 648-4452 (817) 571-9015 FAX (817) 685-6232

THE LEADING PC MAGAZINES AGREE:

PhoneDisc® is the fastest way to find anyone, anywhere!

Now the same PhoneDiscs® run on Windows, Mac and DOS!



"You must buy this....one of the few CD-ROM sets that I keep on my desk." *–John Dvorak,* PC MAGAZINE.

Named one of *PC Computing*'s top two business CDs; one of *PC World*'s top twenty-five, PhoneDisc® has 91 million total listings, 21 million more than its leading competitor – and it's 50% more accurate.

RESIDENTIAL $79 Find 81 million numbers, addresses, even zip codes in a fraction of the time, and at a fraction of the cost of directory assistance calls. Download, print and dial.

BUSINESS $79 Identify 9.5 million business names from just a phone number or street address; business type or SIC code.

PowerFinder™ $249 The master investigative tool™ with over 91 million listings. Developed for government agencies. Features include search by number and address of 91 million residential and business listings on five regional discs.

1-800-284-8353

PhoneDisc® USA Digital Directory Assistance, Inc 6931 Arlington Rd Suite 405 Bethesda, MD 20814-5231

The fastest way to find anyone, anywhere!

CIRCLE 401 ON READER SERVICE CARD

Persuasion And Negotiation Software

WINFLUENCE!

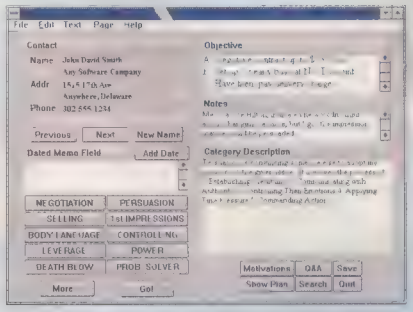
THE SOFTWARE VERSION OF "HOW TO INFLUENCE PEOPLE"™

GAIN CONTROL WITH WINFLUENCE

10 Ways to make people instantly like you
17 Formulas for projecting powerful charisma
12 Techniques for controlling other people
9 Ways to get people to talk about themselves
21 Ways of finding out important facts
5 Complete systems for starting conversations
A 7-step procedure for getting information
5-steps that make your viewpoint standout
The 9 Stages of Negotiation

Winfluence uses hundreds of strategies and scenarios to create your detailed influence blueprint. Each plan includes specific *techniques, tactics, actions* and exact *phrases & gestures* to use to get what you want.

- Never take "no" for an answer
- Make them glad they said "yes"!
- Impress people, start new relationships easily
- Silence your critics
- Resolve disagreements in your favor



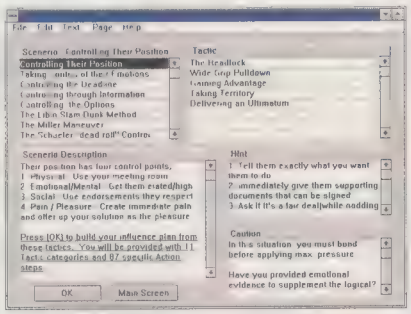
Full contact manager! 20 Powerful Categories!

TAKE-THE-EDGE WITH CONFIDENCE

- Simple ways to make people like you
- Step-by-step conversation guidelines
- Professional negotiation strategies
- Keys to gaining instant credibility
- How to find the bottom line in every deal

INSTANTLY BECOME A SKILLFUL PERSUADER AND MASTER-STRATEGIST!

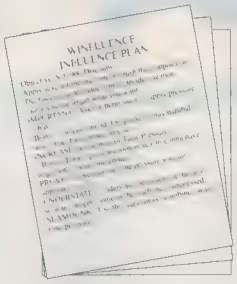
Use WINFLUENCE: The Persuasion Expert to Persuade and Influence...*To get people to do what you want them to do.* This Interactive Software creates a detailed persuasion blueprint, unique for every situation and always bulls-eye accurate.



This screen leads to thousands of specific actions

SOFTWARE MAKES IT SIMPLE

By using WINFLUENCE you can impress people the right way, put enthusiasm and powerful charisma into every conversation, apply time pressure to create instant influence and easily communicate with confidence & authority. Winfluence will show you the right way to make eye contact, and how to use body language to your advantage. You'll handle emotionally charged situations to your benefit and easily outwit your competition. Wouldn't you like to know which people really like you? How much a customer is willing to pay for your product? What impresses someone you're interested in? How to get information from someone who doesn't want to give it to you? With Winfluence, you'll take advantage of all these opportunities!



HOW DOES IT WORK?

Winfluence uses a *point-and-click* system to isolate your problems and then it identifies Strategies, Tactics and Specific Actions from which your "Plan-of-Influence" is created. Winfluence uses only Researched & Tested Methods, including the basic techniques of the great persuaders. Men such as Carnegie, Jung, Churchill, Rockford, Schwab and Klaff, *the Boston Bulldog*.

Most of the things you want in life are also wanted by other people. Once in a while there's plenty to go around, but most of the time there's tough competition. Winfluence is the difference between getting what you want and losing out. It's *point-and-click* ease and awesome power let you persuade, influence and control others and negotiate every deal to your advantage!

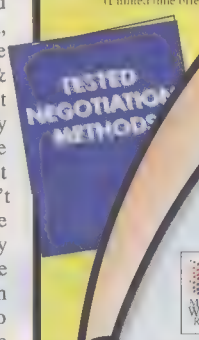
Free Module: The Problem Blaster Includes Quick-Solve, DecisionMaster and V.P.S.S.(Vast Problem Solving System)

"Winfluence makes me a carefully laid out plan so I can respond without delay or hesitation while I'm under fire from the prosecution."

Jonathan Comnes,
Criminal Defense Attorney

* Min. Sys. Requirements 386 w/Windows 3.1

FREE BOOKLET!
GET THIS FREE BOOKLET ON NEGOTIATION.
(Limited time offer!)



INFORMATION SOFTWARE

All For Just **$79.95**

SUPER 3-PACK
1. Winfluence -- The Persuasion Expert
2. The Personality Assesor
3. Q & A

1-800-850-3778

Mail to: Information Software 2528 Capital Circle SE Tallahassee, FL 32311
All coupon orders shipped the same day received! (Checks allow 7-10 days)

Name:_____
Address:_____
City:_____ State____ Zip:_____
Signature:_____
☐Check ☐ ☐ ☐ Quantity:_____
Card No._____ Exp. Date_____

(Outside the U.S. Dial 904-656-0008, FAX Orders dial 904-656-1402)

INFORMATION SOFTWARE 2528 Capital Circle SE Tallahassee, FL. 32311

CIRCLE 402 ON READER SERVICE CARD

OS/2 APPLICATIONS

Great price and selection—call or visit:

COMPUSA 1-800-COMPUSA

EGGHEAD SOFTWARE 1-800-EGGHEAD

MicroWAREHOUSE 1-800-367-7080

DUSTIN Plain Wrap Prices, Black Tie Service. 1-800-274-6611

Prices shown are manufacturer list prices. Specials and discounts may be available. All products may not be in stock at all stores. Be sure to ask for availability.

PCMCIA Data/Fax Modems

by Apex Data, Inc.

Our high speed data/fax modems are cellular capable and include OS/2 drivers and Phoenix® PCM+ card and socket services with every PCMCIA modem we ship. Compatible with a variety of popular notebooks.

$329

Person to Person *by IBM*

Use Person to Person/2 to conduct real time data conferencing between multiple participants. Share text, files, graphics, images and application screens with remote clients and associates over LAN's, ISDN and async connections. This is a great solution for making remote presentations, enhancing Help Desks, providing distance learning and facilitating telecommuting. Image capture and video sharing are also supported with the addition of IBM's ActionMedia II card.

$280

DeScribe Word Processor 4.0

by DeScribe, Inc.

DeScribe® Word Processor 4.0 sets the pace with its native 32-bit application that out performs any product of its kind, using superior multitasking and multithreading capabilities to continue working while other operations are underway. The exclusive and incomparable Unlimited UNDO, extensive custom toolbox and document processing features combine with seamless Workplace Shell integration to make DeScribe 4.0, THE product of choice.

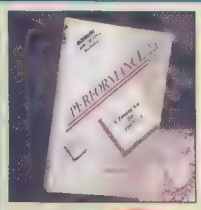
upgrade $139

$495

KopyKat *by Hilgraeve*

KopyKat delivers fast, reliable graphical remote control between OS/2 systems. KopyKat supports connections through NetBIOS-compatible LANs, modems, or serial cables. With KopyKat, you can display the entire desktop of a remote OS/2 system in a window on your system. And Hilgraeve's hot compression technology and built-in support for hundreds of modems makes KopyKat the fastest, easiest solution for dial-up remote control.

$199



Performance 2.1 PLUS

by Clear and Simple

A Tuning & Utility Kit for OS/2. 100 Page book INSTRUCTS and 25 OS/2 REXX Utilities make your system perform snappy! PLUS - 15 add'l Utilities. Automate a daily file backup; Automatic Desktop Saves; Create OS/2 Boot Diskette; reset icons; Simplify managing your disk space and more! INCLUDES 3000+ OS/2 Icons!

$39.95

HyperACCESS/5 *by Hilgraeve*

Discover how good communications can be. This award-winning async comm program includes: names support for 200+ modems, built-in virus protection, remote control through modems and across networks for DOS and OS/2, twelve fast file transfer protocols, including Z modem, seventeen terminal emulations "Editors' Choice" PC Magazine, "Best Overall...extremely easy to learn and use" Software Digest, "Best Buy", PC World, "Best for OS/2", PC Week.

$199

Sponsored by the OS/2 Vendor Council

Dealers, Retailers & Mail Order Inquiries Welcome

Call (203) 658-1204

for OS/2

BackMaster *by MSR Development*

Full, partial, and unattended backups, Supports FAT and HPFS file systems, handles long file names and EA's, Backup WPS, desktop, and system files, read existing DOS QIC 40/80 tapes, Migrate DOS files to OS/2 using tape, transparent background operation, supports most QIC 40/80 tape drives including: Archive XL Series, CMS Jumbo 120/250, Conner 250, IOmega TAPE250, Mountain FileSafe 4000/8000, Summit SE120/250, and many other Generic QIC 40/80 drives. Disaster recovery utilities included! Requires OS/2 2.1 and 8MB of RAM.

$79.95

AVAILABLE NOW!

Great price and selection—call or visit:

INDELIBLE BLUE Inc. 1-800-776-8284

MICRO CENTER

PROVANTAGE 1-800-336-1166

The Corner Store 1-800-IBUYOS2

O2 EXPRESS 1-800-OS2-KWIK

..Prices shown are manufacturer list prices. Specials and discounts may be available. All products may not be in stock at all stores. Be sure to ask for availability.

OS/2 - PREMIER

CA - SuperProject 3.0

by Computer Associates International, Inc.

CA-SuperProject is a complete set of project management and presentation tools that are easy to use and learn. Features include: interactive project creation in PERT, Gantt, and WBS views; pop-up forms; user-defined fields and formulas; interactive control of column widths and titles; WYSIWYG graphics; preview to screen; multiple outlines; effort, elapsed, workday, and span-driven tasks; and input and tracking of actuals.

upgrade $149

MEDIAscript OS/2 Special Edition

by Network Technology Corporation

MEDIAscript defines the state of the art in multimedia authoring tools. Native OS/2 support for MMPM/2 digital audio, Indeo and Ultimotion video, and animation is provided in an easy to use object oriented design environment. Non-programmers can use MEDIAscript icons to build powerful training applications, kiosks, and compelling multimedia presentations. Compatible with other MEDIAscript OS/2 products.

$395

CA - Realizer 2.0

by Computer Associates International, Inc.

CA-Realizer defines a new generation of development tools. The same CA-Realizer BASIC code that creates a Windows application ports instantly to a OS/2! CA-Realizer will even make a set of Windows or OS/2 install Disks! CA-Realizer's newly enhanced feature set makes it a must have for any serious corporate, professional or end-user developer.

$99

SkyScraper™ Desktop Manager For OS/2

by Binar Graphics, Inc

SkyScraper lets you run all your applications full-screen at the same time, each one on its own virtual " desk " on the SkyScraper toolbar, and switch between them instantly with a single mouse click. You can launch applications by dragging and dropping them on the SkyScraper toolbar, and even launch DOS and OS/2 text mode sessions!

$99.95

LinkRight *by Rightware Inc.,*

Transfer files from OS/2 to OS/2 or OS/2 to/from DOS. HPFS, long file names, EA aware. Uses serial and parallel ports. Uses compression and CRC checking. Multi-threaded Includes OS/2 PM, OS/2 character mode and DOS versions. Compatible with LapLink™ cables.

upgrade $119 $189

Lotus SmartSuite for OS/2

by Lotus Development Corp.

The first complete desktop suite of native applications for IBM's OS/2 operating system. Comprised of 32-bit, OS/2 Workplace Shell-integrated versions of Ami Pro, 1-2-3, Freelance Graphics and cc:Mail, the integrated suite is compatible and shares interface similarities, including Lotus SmartIcons images, with products in the Lotus Suite of Windows applications.

upgrade $595 $795

Power Translator® Professional

by Globalink

Power Translator Professional offers full-sentence idiomatically-accurate, foreign language translations for OS/2. With Subject Dictionary capability obtain maximum translation accuracy with subject, industry or profession specific terminology. Multi-user and multi-tasking. Bilingual screens and manuals. Languages include Spanish, French or German to/from English. Russian coming soon.

Call for Prices

for OS/2

Sponsored by the OS/2 Vendor Council

Dealers, Retailers & Mail Order Inquiries Welcome

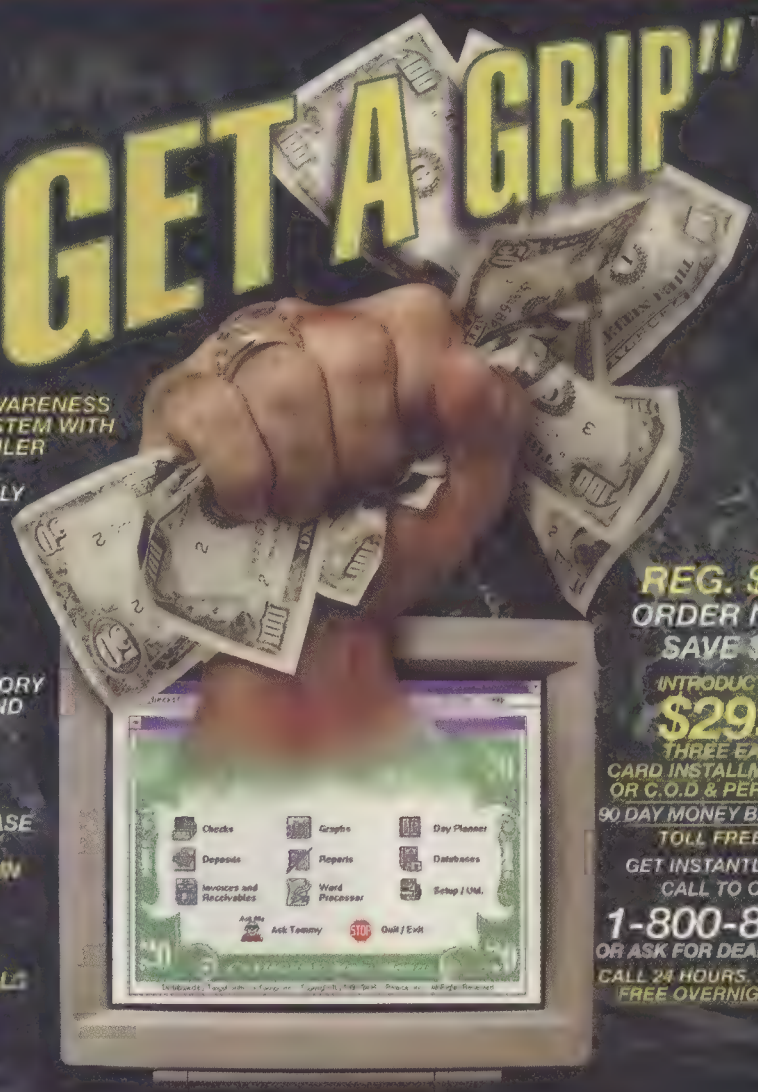
Call (203) 658-1204

CIRCLE 430 ON READER SERVICE CARD

THE WORLD'S MOST POWERFUL SINGLE-SOLUTION OFFICE SOFTWARE!

THE AFFORDABLE SOLUTION THAT LETS YOU BECOME INSTANTLY PRODUCTIVE! SPEND LESS TIME LEARNING, AND MORE TIME EARNING!

"GET A GRIP"™



- EXCLUSIVE FINANCIAL AWARENESS AND GOAL TRACKING SYSTEM WITH LOAN & SAVINGS SCHEDULER
- CHOOSE CASH, ACCRUAL OR BOTH SIMULTANEOUSLY
- 3 TYPES OF INVOICES
- PURCHASE ORDERS
- CREDIT MEMOS AND STATEMENTS
- ACCOUNTS PAYABLE
- ACCOUNTS RECEIVABLE
- GENERAL LEDGER
- FULL PERPETUAL INVENTORY WITH MULTI-LOCATION AND PRICE LEVELS BY ITEM
- CHECK WRITING
- DEPOSIT TRACKING
- POWERFUL PRE-SET AND USER DEFINABLE DATABASE AUTO DIAL THROUGHOUT
- CONTACT MANAGEMENT W CLIENT DATABASE WITH "PHONE SCRIPT"
- WORD PROCESSOR WITH MAIL MERGE FROM DATABASE AND FINANCIALS
- DAY PLANNER SYSTEM
- UNIQUE PREPARE FOR ACCOUNTANT FEATURE
- ON SCREEN CONTEXT SENSITIVE HELP

REG. $399.95
ORDER NOW AND SAVE $100.00!

INTRODUCTORY OFFER
$299.95
THREE EASY CREDIT CARD INSTALLMENTS OF $99.98! OR C.O.D & PERSONAL CHECKS
90 DAY MONEY BACK GUARANTEE!
TOLL FREE SUPPORT!
GET INSTANTLY PRODUCTIVE!
CALL TO ORDER NOW!
1-800-872-4813
OR ASK FOR DEALER NEAREST YOU!
CALL 24 HOURS, 7 DAYS A WEEK!
FREE OVERNIGHT DELIVERY!

...ALL THIS AND MUCH MORE, IN ONE EASY INTERACTIVE SOFTWARE PACKAGE!
ONLY 4 DISKS TO INSTALL AND JUST ONE EASY REFERENCE MANUAL!

YOU NO LONGER HAVE TO SPEND $1,000.00 OR MORE FOR SEPARATE SOFTWARE PACKAGES THAT WON'T LIVE UP TO YOUR EXPECTATIONS. . .

. . . OR PERHAPS YOU ARE ONE OF THOSE WHO HAVE LEARNED THE **"BITTER TRUTH"** ABOUT WHAT SOME COMPANIES ARE TRYING TO CALL **"SUITE"**!

Look for this display at software retailers throughout the U.S. and Canada!

Call 1-1800-872-4813 for dealer nearest you!

CASHGRAF

IT'S EXACTLY WHAT YOU EXPECTED WHEN YOU BOUGHT YOUR COMPUTER ... ABOUT 1K AS YOU CAN BUY!

CASHGRAF operates on Windows 3.1 or higher, requires 11 MB of hard drive, 4 MB of RAM, on 386 or higher system.

TARGET SOFTWARE GROUP INC
2901 58TH AVE. N.
ST. PETERSBURG, FL

THE WORLD'S EASIEST & MOST POWERFUL ICON DRIVEN GRAPHICAL REPORT GENERATOR

CIRCLE 412 ON READER SERVICE CARD

Thinking of Bar Codes ...

Think Videx!!

If you need a quality bar code reader small enough to fit in the palm of your hand, Videx has a bar code reader for you.

The TimeWand I offers credit-card sized portability, ideal in time and document tracking applications. The rugged DuraWand can take the punishment typically found in delivery and security applications. The TimeWand II offers the durability and computing power necessary in applications ranging from hospital patient care to warehouse inventory.

Call today to receive a free information kit on Videx portable bar code readers.

See Videx products at PC Expo NY Booth #4766

1105 N.E. Circle Blvd., Corvallis, OR 97330
503-758-0521 • Fax 503-752-5285

Videx

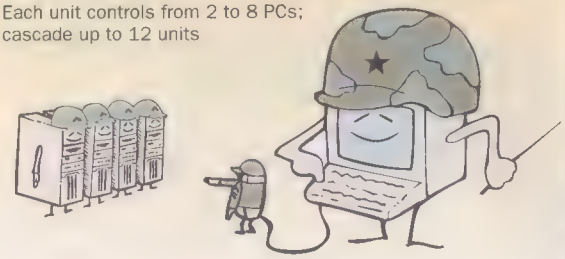
Videx, TimeWand, and DuraWand are registered trademarks of Videx, Inc. GCO462B

CIRCLE 403 ON READER SERVICE CARD

AutoBoot Commander™

Control up to 96 file servers with just 1 keyboard, monitor and mouse!

- Supports all 100% IBM compatible computers
- New KeyScanTM feature for keyboard-controlled scanning
- Jumperless support for analog (VGA) and TTL video
- Add a second control center up to 150 feet away
- AutoBootTM feature boots computers without operator intervention
- Each unit controls from 2 to 8 PCs; cascade up to 12 units



For Macintosh support, ask about our new Mediator™ for Macintosh!

Cybex Corporation
4912 Research Drive • Huntsville, AL 35805 USA
(205) 430-4000 • FAX (205) 430-4030

CYBEX™

IBM is a trademark of IBM Corporation. Macintosh is a trademark of Apple Computer, Inc.
Dealer Program Available **Made in USA**

CIRCLE 404 ON READER SERVICE CARD

DON'T BE OUT OF TOUCH!

Talking Technology has multi-line voice and fax processing systems so you can stay in touch with your world.

For Sales and Technical Information Call:
1-800-846-4884
Demo: 1-510-522-3800 ext. 120

Complete multi-line packages start at $699!

TALKING TECHNOLOGY, INC.
1124 Atlantic Avenue Alameda California 94501

CIRCLE 405 ON READER SERVICE CARD

PENTIUM NOTEBOOKS NOW!!

Everyone is *talking* about PENTIUM while SMR is *shipping* them. We specialize in providing cutting edge technology for the professionals with high power and storage requirements. Our PENTIUMS have up to 40MB RAM and 520 MB hard drives at great prices!!

Priced From $1695

- SMR82X
- 486 VESA LOCAL BUS
- Up to 520MB HD
- Up to 20MB RAM
- Mono/Dual Scan Color/Active Color
- 128K Cache
- 2 Type II PCMCIA Card Slots
- Built-in Trackball
- Optional Docking Station and More

COMPARE the SMR82X 486DX2-50 with VESA LOCAL BUS 520MB HD, 20MB RAM and DUAL Scan Color at just $3,995

➪ All Computers Custom Configured
➪ Leasing Programs Available

for further information, please call...

SMR Computer Services, Inc. **800 365-5761**

26941 Cabot Road, Laguna Hills, CA 92653

CIRCLE 406 ON READER SERVICE CARD

BOLD IMAGES! BIG RESULTS!

Premier wins proven results for advertisers whose messages stand out in affordable full color. Place your ad where image makes all the difference—with 875,769 Business Computing Experts who spend over $100,000 a year on PC hardware, software, and services!

PC/COMPUTING PREMIER

800-825-4237

Bright color. Bright price.

$2,599.

SPECIAL OFFER!

The BOXLIGHT 1285 ColorShow Projection Panel. Our brightest true-color panel. And for $950 off the list price, it's an unbeatable value.

- Compact, easy-travel panel
- 640 x 480 resolution
- PC and Mac compatible
- FREE remote and cables

Your direct source for all the bright answers.
- Widest selection
- Instant availability
- Overnight shipping
- 30-day guarantee

BOXLIGHT®

17771 Fjord Dr. N.E., Poulsbo, WA 98370
206-779-7001 • Payment: Visa, MasterCard, American Express, COD and Purchase Orders (some restrictions). Leasing and rental options available. 30 Day Money Back Guarantee

Call Today 1-800-497-4007

CIRCLE 407 ON READER SERVICE CARD

Learn To Play The Piano, Create And Print Your Own Music, And Jam With Your Own Computerized Band!

CRESCENDO™

Music Upgrade Kit

Crescendo™ is the perfect music upgrade ... even if you already have a sound card or an upgrade kit.

Besides adding crystal clear Wavetable synthesis to your computer, Crescendo entertains, educates and opens the door to the wonderful world of music.

Crescendo includes ■ the Maui™ wavetable synthesizer card, with SampleStore™ technology, and 128 General MIDI instruments ■ a full-size, professional 49-key music keyboard ■ The Miracle Piano Teaching System™ software — hundreds of thousands of people have already been taught by this ingenious, interactive, serious musical educational system ■ Wave/SE™ sound editor, which lets you tailor .WAV files for use with SampleStore ■ Stratos™ MIDI sequencer software to record and play back your musical creation ■ and Band-In-A-Box™ musical accompaniment software with 24 different musical styles.

Visit your favorite dealer, or call **800-645-5640** for more information today!

TURTLE BEACH SYSTEMS

52 Grumbacher Road • York, Pennsylvania 17402 • 717-767-0200 • FAX: 717-767-6033

All trademarks are registered by their respective companies. Specifications may change without notice.

CIRCLE 410 ON READER SERVICE CARD

Do-It-All Disk Drive for Home, Office and Travel Computing!

$299.

Mobile Disk 120/240MB*

*Double disk capacity is based on use of DOS 6.0 data compression utility

Call for higher capabilities, battery and OS/2 models.

1-800-873-VALU

FAX (408) 437-9333

Value Stor

Compact, Plug N' Play with any PC!
Mobile Disk packs up to 680MB* into a compact, portable unit. Simply plug into any portable or PC printer port and you're ready to go!

Great Backup!
Simply use DOS/Windows copy to do backup. It's easy, faster than tape and your backed up data is instantly accessible. Plus if your internal drive fails, it fills in as your primary disk.

Privacy & Security!
Secure your data easily. Unplug Mobile Disk and lock it away safely.

CIRCLE 408 ON READER SERVICE CARD

BEST 9-TRACK TAPE SOLUTION OF THE 90'S!

- PC 286/386/486
- RISC/6000 • AS/400
- SUN • HP • DEC • APPLE

Our name begins with Quality!

Call us today for price and information.

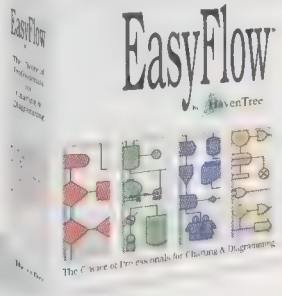
QUALSTAR®

9621 IRONDALE AVE., CHATSWORTH, CA 91311
FAX (818) 882-4081 • (818) 882-5822

CIRCLE 409 ON READER SERVICE CARD

For the 160,000 who waited . . .

It's here for Windows™



If you didn't wait

. . . the switch is on!

To order call 1-800-267-0668

HavenTree SOFTWARE

HavenTree Software Limited P.O. Box 470 Fineview, NY 13640 Tel:(613)544-6035

CIRCLE 411 ON READER SERVICE CARD

Video Training for Windows Applications

Your Personal Windows Training Specialists

Average: 1 hour & 45 minutes of instruction per video

Mark Wright
National Seminar Trainer
& MS Windows Instructor

Dawn Bjork
Corporate Trainer
& MS Word Instructor

Dave Bellamy
MS Excel Specialist
& MS Project Instructor

Alison Balter
Corporate/Government Trainer
& Borland Instructor

Connie Lane
Personal Trainer & Lotus
1-2-3/Freelance Instructor

Special Microsoft Office Video Training

Microsoft Office 4.0 Standard (7 videos/13 hours)....$299.95
Microsoft Office 4.0 Pro (13 videos/24 hours).....$495.95
Microsoft Office 4.0 Plus (15 videos/27 hours) $579.95

Special Lotus SmartSuite Video Training

Lotus SmartSuite 2 Standard (7 videos/13 hours).....$299.95
Lotus SmartSuite 2 Pro (13 videos/24 hours) $495.95
Lotus SmartSuite 2 Plus (15 videos/27 hours).....$579.95

Special Borland Office Video Training

Borland Office 2.0 Standard (6 videos/10 hours).....$239.95
Borland Office 2.0 Pro (9 videos/17 hours).....$349.95
Borland Office 2.0 Plus (11 videos/21 hours) $429.95

MS Windows 3.1		MS Word 6.0		MS Excel 5.0		Borland Quattro Pro 5.0		Lotus 1-2-3 Rel 4	
Beginning	$49.95	Beg/Int/Adv	(ea) $49.95	Beg/Int/Adv	(ea) $49.95	Beginning	$49.95	Beginning	$49.95
Advanced	$49.95	Any Two Videos	$89.95	Any Two Videos	$89.95	Intermediate	$49.95	Intermediate	$49.95
Beg/Adv Set	$89.95	All Three Videos	$129.95	All Three Videos	$129.95	Advanced	$49.95	Advanced	$49.95
DOS & Win Basics	$49.95	2.0 to 6.0 Upgrade	$49.95	4.0 to 5.0 Upgrade	$49.95	All Three Videos	$129.95	All Three Videos	$129.95

MS PowerPoint 4.0		MS Works 3.0		MS Project 3.0		Borland Paradox 4.5		Lotus Ami Pro 3.0	
Beg/Int/Adv	(ea) $49.95	Two Videos	(ea) $49.95	Level I/II/III/IV	(ea) $79.95	Beg/Int/Adv	(ea) $49.95	Beg/Int/Adv	(ea) [illegible]
All Three Videos	$129.95	Both Videos	$89.95	All Four Videos	$299.95	All Three Videos	$129.95	All Three Videos	$129.95

MS Access 2.0		MS Publisher 2.0		MS Visual Basic 3.0		WordPerfect SIX.0		Lotus Approach 2.0	
[illegible]	[illegible]	Two Videos	(ea) $49.95	Unit 1/2/3	(ea) $89.95	Beg/Int/Adv	(ea) $49.95	Beg/Int/Adv	(ea) $49.95
All Three Videos	$129.95	Both Videos	$89.95	All Three Videos	$249.95	All Three Videos	$129.95	All Three Videos	$129.95

MS Access 1.1		Other Videos		MS FoxPro 2.5		CorelDRAW 4		Lotus Freelance 2.0	
Beg/Int/Adv	(ea) $49.95	MS Mail	$49.95	Basics/Pwr Tools	(ea) $59.95	Beg/Int/Adv	(ea) $59.95	Beg/Int/Adv	(ea) [illegible]
All Three Videos	$129.95	MS Schedule+	$49.95	Both Videos	$99.95	All Three Videos	$149.95	All Three Videos	$129.95
		Win for Workgroups	$59.95						

Shipping: $5.00 for the first two video tapes, plus $1.50 for each additional video tape. International shipping additional.

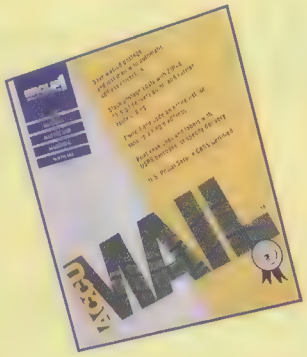
Risk Free 30 DAY Money Back Guarantee

3 Easy Ways to Order: VISA MasterCard C.O.D., Company P.O. or Checks

CALL ▶ 1-800-748-4838 (801-375-8680) FAX ▶ 1-801-373-6872 MAIL ▶ KeyStone Learning Systems Corp. 2181 Larsen Parkway Provo, UT 84606 PCC 794

CIRCLE 413 ON READER SERVICE CARD

Database Mailing and Marketing



Save up to 38% on 3rd-class postage! Discover how you can professionally manage your mailing lists on your PC with **ArcList** and **AccuMail**. These easy-to-use programs pay for themselves! AccuMail corrects and standardizes addresses, adds the ZIP+4 and delivery point barcode, so you receive optimal postal discounts. ArcList eliminates duplicates, will merge/purge lists, performs postal presorting.

Boost the performance of your direct marketing efforts. For a copy of the *FREE* Mail Flow Planning System diskette from the postal service, call **1-800-368-5806**

CIRCLE 414 ON READER SERVICE CARD

Let our M.O.M. run your mail or phone order business!

If you're a cataloger, wholesaler, distributor, retailer– anyone selling products and services by phone or mail–get complete control of your business with Mail Order Manager. The #1 Choice of direct marketers nationwide, M.O.M. gives you everything you need–order entry/review, credit card processing, UPS shipping, inventory, profit analysis, accounting, telemarketing, list management - all in one powerful integrated program! dBase III+ files. Single and multi-user versions. Systems start at **$1195**.
Order our trial working demonstration version for a refundable deposit of just $25.

Call Today **1-800-858-3666** or **201-335-1256**
Dydacomp Development Corp.
150 River Road, Suite N1, Montville, NJ 07045

Yours FREE - our complete catalog of sales and marketing software! Ask for a copy when you call!

CIRCLE 415 ON READER SERVICE CARD

FOR WINDOWS

myHouse

Create and walk through your home design projects in 3D color!

All New! Now with Movie Maker!

View your floor plans as full-color, 3D renderings or create a movie tour of your design.

- *Easy 2D Floor Plan Creation*
- *Create And Edit A Home Movie Tour*
- *More Than 300 Predrawn 3D Design Objects*
- *Full-Size Plans–No Plotter Needed*
- *Compatible With myHouse For DOS*

Only $49.95

DesignWare
17 Main Street, Watertown, MA 02172
PH: (617) 924-6715 Fax: (617) 924-1699

To Order, CALL: **800-536-2596**

CIRCLE 416 ON READER SERVICE CARD

CD-ROM's Next to Wholesale!

Call us for a free catalog! 200 Plus Titles to choose!

5 ft 10 pak (Doom Stellar 7, Time, Man of the Year World FactBook, Best of Media Clips, World Atlas, PC Karaoke Classics, CD-ROM of CD-ROMs, King's Quest V, PC Animation Festival)	$35.00
Aircraft EncycL.	$29 00
Arthurs Teacher	$18.00
Audubons Birds.	$17 00
Audubons Mammals	$17.00
Auto Alamanc 94	$18.00
Baseball Cards	$29 00
Business Master	$19 00
C User Group	$27 00
CD-CAD Ver 3.7 .	$25 00
CD Deluxe Pack . .	$24 00
Chessmaster 4000*	$19 00
CICA Windows	$19.00
Cinemania '94 . . .	$55 00
Clipart Warehouse	$10.00
Clipart Heaven . .	$14.00
Cookbook Heaven	$19 00
Color Magic . . .	$19.00
Composer Quest .	$25 00
Comptons Inter 94*	$39 00
Critical Path	**$45.00**
Desktop Publisher	$24 00
Dictionaries & lang	$10 00
Dino/Space Advent.	$25 00
Direct Phone	$79 00
Dragon's Lair	$39.00
Dr Windows . .	$12 00
Ecoquest: - Cetus .	$19 00
Electricity & Mag.	$29 00
Encyc. of Sound	$10 00
Eye of the Behold III	$19.00
F117A/F15 Strike	$29 00
Family Doctor 3.0 . .	$19 00
Fonts1	$12 00
Fonts Plantinum	$15 00
Free Phone	$28 00
Games 1993 . . .	$19.00
Games Plantinum	$17.00
Gardening . . .	$10.00
Global Explorer . .	$89 00
GIF's Galaxy .	$17 00
Graphic Works	$29 00
Grolier's Encyc. 6 0	$33 00
Gus Goes to Cyber.	$19 00
HAM Radio	$10 00
House of Games II	$19 00
Indiana Jones . .	$45 00
J.F.K. Assination	$39.00
Jets & Props . . .	$19 00
Jones in the Fast	$14.50
Just Grandma/Me*	$29.00
Jutland*	$24 00
King's Quest V . .	$14 50
King's Quest VI	$24.00
Kodak Photo CD	$12 00
Lawnmower Man	**$43.00**
Speak Spanish	$54.00
Linux Winter 94	$18 00
LOOM*	$15.00
Maddog McCree .	$34 00
Magic Death	$18 00
Maniac Mansion	$45 00
Mario is Missing* . .	$18.00
Mavis Beacon*	$19 00
Mayo Clinic*	$19 00
Midi Music Shop .	$19 00
Might & Magic -Xeen	$19.00
Mix. Mother Goose	$15.00
Monster Media III (124pg book, 650 Meg!)	$19.00
" Best of 1993	$39 00
Mother of All Clipart	$17 00
MPC Wizard 2	$15.00
M Y S T	$49 00
National Parks .	$19 00
Night Owl Ver. 12 .	**$27.00**
Our Solar Systems	$10 00
PC Karaoke . .	$16.00
PC SIG 13th Ed.	**$19.00**
Phoenix Version 4	$13 00
Plant Doctor . .	$25 00
Playing with Lang (German, French,or Spanish)	$19.00
Precision Mapping	$65.00
Prescription Drugs	$27 00
Programmer's ROM	$29 00
Publish It! 2.0. .	$12 00
Publishers Paradise	$19 00
Publisher Plantinum	$15 00
PuttPutt Join Parade	$19.00
Rebel Assault. . .	$45 00
Return to Zork . . .	$25 00
Seventh Guest . .	$28 00
Shareware 1994	$23 00
Shareware Heaven II	$25 00
Share Studio IV .	$15.00
Sherlock Holmes II	$29 00
Vault Plantinum	$15 00
Street Atlas Ver. 2.0	$85.00
Wayzata World	$17.00
Where is Carmen? .	$19.00
Willy Beamish . . .	$15.00
Windows 1994 . .	$23 00

Your Best Price For CD's! Dealers Welcome!

RACEWAY COMPUTERS

Call Now! 1-800-240-0055

CIRCLE 417 ON READER SERVICE CARD

INFOBUSINESS UNLOCKS THE TREASURE CHEST OF VALUABLE INFORMATION WITH:

INFORMATION USA

COMPUTE CHOICE AWARD FINALIST

(MULTIMEDIA CD-ROM/WINDOWS)

Access the U.S. Government's trillion dollar information empire, 700,000 free experts and 30,000 free/low-cost sources of information. Contains 100% of all Federal grants, loans, scholarships, surplus properties, government auctions and much more.

Named one of PC Computing's Top Six Reference CD's

Finalist, Compute Choice Award—Best Reference

Special Offer: $54.95* List Price: $69.95

ORDER TODAY: 1-800-657-5300

*FAX (801) 221 1194 *Add $4 00* for shipping and handling*

Other INFOBUSINESS Top-Selling CD-ROM titles: *Mega Movie Guide, Government Giveaways for Entrepreneurs Job Power Source*

©1994 INFOBUSINESS INC ALL RIGHTS RESERVED

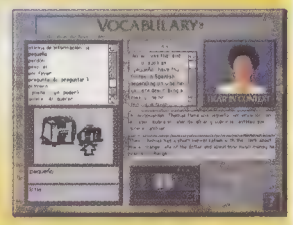
CIRCLE 418 ON READER SERVICE CARD

LEARN A FOREIGN LANGUAGE!

In today's international marketplace, knowing a second language is more important than ever. With foreign language courses from HyperGlot, you can gain that competitive edge. We have courses in Spanish, French, German and Italian.

LEARN TO SPEAK SPANISH 4.0 WITH VIDEO!

A complete first year language course with extensive Quicktime™ video and sound on CD. This course will teach you to speak, understand, read and write Spanish! Native speakers lead you through the course step by step. **Spanish 4.0 and many other HyperGlot Products are available through your local retailer.**



1-800-290-4568

To order or receive a catalog call toll-free or write: P.O. Box 10746, Knoxville, TN 37939

HyperGlot the foreign language software company

CIRCLE 419 ON READER SERVICE CARD

The "Most Innovative" Software Of 1993 Is Also The Most Useful.

Plug in to POWER TRANSLATOR™ from Globalink®, the software package named "the most innovative of 1993" by *Discover Magazine*.

POWER TRANSLATOR features speeds up to 100 times faster than human translators, easily-updated dictionaries of over 250,000 words and phrases, and a 90%-plus accuracy rate!

Now, getting grammatically-correct translations of words, phrases or entire documents in Spanish, French or German to/from English is as easy as the push of a button.

Find out about the software package that's got *Discover Magazine*—and a lot of other people—talking. Call Globalink today and ask about POWER TRANSLATOR, your ticket to world-wide communication.

Globalink, Inc.

9302 Lee Highway, Fairfax, VA 22031-1208
Intl.: 1-703-273-5600
Fax: 1-703-273-3866

1-800-255-5660
U.S. and Canada

CIRCLE 420 ON READER SERVICE CARD

Save Disk Space

"PKZIP is the undisputed champion of data compression" - BYTE Magazine

"It [PKZIP] combines blazing decompression times and excellent compression speed" - PC Magazine

PKZIP version 2.0

PKWARE® introduces the next generation of its award winning compression utility. PKZIP 2.0 yields greater performance levels than achieved with previous releases of the software.

Software developers! You can significantly reduce product duplication costs by decreasing the number of disks required to distribute your applications. Call for Distribution License information.

Data Compression Library

The PKWARE Data Compression Library® allows you to incorporate data compression technology into your software applications. The application program controls all the input and output of data, allowing data to be compressed or extracted to or from any device or area of memory.

All-purpose Data Compression algorithm compresses ASCII or binary data quickly. An adjustable dictionary size allows software to be fine tuned for maximum compression or speed. The routines can be used with most popular languages, such as C, C++, Pascal, Assembly, Basic, etc.

PKLITE® Put Your Executables on a Painless Diet!

PKLITE increases your valuable disk space by compressing executable (.EXE and .COM) files by an average of 45%. The operation of PKLITE is transparent. All you will notice is more available disk space!

Software developers! Save disk space and media costs with smaller executables. You can distribute your software in a compressed form with PKLITE Professional.® PKLITE Professional gives you the ability to compress files so that they cannot be expanded. This discourages reverse engineering of your programs.

You may place your order for PKWARE products by phone, by fax or by mail. Prices listed are for use on a single computer. Please call for multiple use information.

PKZIP, PKUNZIP,® PKSFX® 2.0	$47.00
PKLITE	46.00
PKLITE Professional	146.00
PKWARE Data Compression Library	295.00

Please add $5.00 Shipping & Handling per package in the US & Canada, $11.25 overseas. Wisconsin residents please add 5% state sales tax and applicable county sales tax.

Terms: ALL ORDERS OUTSIDE OF THE UNITED STATES AND CANADA MUST BE PREPAID, MasterCard, VISA, Check or Money order drawn on an USA bank in US FUNDS, NO COD. Corporate Purchase Orders (Net 30 Days) accepted for software from large corporations within the USA & Canada. Please make remittance payable to PKWARE Inc. Prices and Terms subject to change without notice.

You can receive a catalog containing information on the complete line of PKWARE software by calling or writing.

PKWARE INC.

9025 N. Deerwood Drive Brown Deer, WI 53223-2437
(414) 354-8699 Fax (414) 354-8559

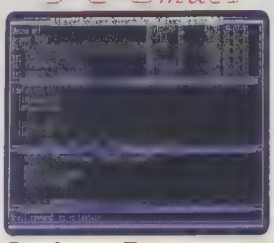
PC/C 7/94

CIRCLE 421 ON READER SERVICE CARD

The most powerful programmers editor for UNIX ...
...is now the most powerful editor available for DOS

PC Emacs

- Customizable
- Extensible
- Unlimited file size & number of files *
- Multiple file tags search/replace
- Mouse support
- Language modes: C,Fortran, Lisp, ...
- Runs GNU Emacs lisp



- Editor Emulations: vi, EDT, Gosling,...
- Multiple windows
- Unlimited key bindings
- Cut & paste between files/ windows, without size limitations *
- Subprocess support
- Suspend to DOS

Use the same editor for DOS Unix.or VMS...
The most complete GNU Emacs implementation available on the PC...
...out-performs other editors costing three to

Limited time introductory offer:
$ 129.95
Also available PC-Curses V+: $49.95

If You're a Serious Programmer...
(714) 253-4110 *"...Emacs is Life"*

ASRI INC
'Bringing Power to the PC'™
Advanced Software Research, Inc. 2102 Business Center Dr. Irvine, CA 92715
Limited only by your system resources

CIRCLE 422 ON READER SERVICE CARD

THE DIFFERENCE IS IMAGE!

Premier wins proven results for advertisers whose messages stand out in affordable full color. Place your ad where image makes all the difference—with 875,769 Business Computing Experts who are spending over $100,000 a year on PC hardware, software, and services!

PC/COMPUTING PREMIER

800-825-4237

Protects While You Type!
SafeSkin

(Down) Time is Money
- Remains in place during use...just type right through it
- Prevents costly repairs
- Soft, flexible, fits like a glove
- Durable High-Tech Polymer lasts for years
- More than 1,000 custom fit models available
- The original SafeSkin® - Only $24.95

Protect Your Entire System
Dust Covers - All Models - All Styles
Economical Vinyl from $6.95 each
Breathable Fabric from $7.95 each

Call Today: 1-800-627-7752

VISA/MC or COD
MCP, Inc. FAX (214) [illegible]
Dealer Inquiries Invited

CIRCLE 423 ON READER SERVICE CARD

PUT YOUR AD HERE AND YOU'LL INCREASE YOUR SALES!

Two-thirds of PC/Computing subscribers know the Marketplace section and more than three-quarters of them took action in the past 12 months as a result of reading an ad.

Took action as a result of reading an ad(net)	76%
Made a note of the information in the advertisement	49%
Purchased the product advertised/decided to purchase in the near future	35%
Requested additional information	30%

Put PC/Computing Marketplace to work for you!
Call today 800-825-4237

Source: '93 PC/Computing Marketplace Subscriber Study

UTILITIES–SUPPORTING PRODUCTS/SUPPLIES

298 JULY 1994

TELEPHONE PBX SYSTEMS & VOICE MAIL

ICV-Karel PBX, An Optimum Electronic Telephone System For Office Automation.

- Built In Fax Switch
- Hot Line
- Music On Hold
- Night Service
- Call Transfer
- Call Hold
- DISA
- Conference
- Do Not Disturb
- Automatic Hold On Busy
- Toll Restriction
- PC Link SMDR
- Voice Mail
- 50 Other Features

Starting from 2 phone lines and 6 extensions.

2 by 6 $349 • 4 by 8 $449
4 by 12 $649 • 6 by 18 $749

24 Hour Info & Fax Back Line
(603) 893-2235

ICV CORPORATION
40 Lowell Rd. Industrial Park #9
Salem, New Hampshire 03079
Phone: (603) 893-2234
Fax: (603) 893-2275
Email: icv@world.std.com

CIRCLE 501 ON READER SERVICE CARD

MEMORY

GUARANTEED LOWEST PRICES
Upgrades for Desktops, Laptops, Laser Printers from Apple to Zenith

PCMCIA SYSTEM SOLUTIONS
1.2 MB SRAM 2,4,8 MB Flash Memory
96/24 Fax Modem 14 4/14 4 Fax Modem

BEST PRICES ON SIMMS & DRAM

30 PIN SIMMS	72 PIN SIMMS
1 x 3	1 x 36
1 x 9	2 x 36
4 x 9	4 x 36
16 x 9	8 x 36

SUPER PRICES ON CD TITLES
We accept P.O.'s from government, schools & qualified firms

ERITECH INTERNATIONAL
818/244-6242 FAX 818/502-5059

CIRCLE 502 ON READER SERVICE CARD

BAR CODE READERS

AMERICAN MICROSYSTEMS
2190 Regal Pkwy. • Euless, Texas 76040 • (817) 571-9015

FOR PC, XT, AT, PS/2 & TERMINALS:

- No software changes required
- Data appears as keyboard input
- Reads Code 39, I-2of5, UPC/EAN, Codabar 11, 93, 128, MSI/Plessey
- Auto-discriminates between codes
- Accepts WAND, SLOT, MAG STRIPE, CCD, LASER
- Easy To Use

BAR CODE PRINTING SOFTWARE:

- For Epson, OKI, IBM, Dot Matrix and HP LaserJet Printers
- Prints Code 39, I-2of5, UPC/EAN, Codabar, 128, 93, 11, MSI/Plessey

PORTABLE READERS:

- Use as a portable, wedge or terminal
- Input Devices: WAND, CCD, or 5V LASER
- Real-time clock for date and time stamps
- Automatic power off with resume
- "Built-In" Inventory programs
- 54 key alpha/numeric keyboard
- Supports HAYES compatible modems

(800) 648-4452 • FAX: (817) 685-6232
30 Day Money Back Guarantee
One Year Warranty

Barcoding with Windows!

The bar coding software that's easy to install *and* easy to learn!

WindowBar™

Ideal for compliance labeling!

- Full-featured, network-read, fully DDE compatible!
- Variable graphics (WYSIWYG)
- Interactive & automatic printing tools via Windows!
- **Rated as the "TOP RECOMMENDATION" by independent expert when tested vs 11 other packages!**
- Supports all popular symbologies, most bar code printers and databases
- Full design capabilities; full Windows implementation!
- **No risk, 30 day money back guarantee!** $495
- **Free 1-800 tech support**
- Distributor & VAR inquiries welcomed

Call now for a Free Demo Disk
1-800-289-6293

Mayer Automation Group • Division of Mayer Electric Supply Company, Inc.
3405 4th Ave S. • Birmingham, AL 35222 • (205) 583-3500 • Fax: (205) 323-0886

CIRCLE 503 ON READER SERVICE CARD

COMPUTER RESET

USED COMPUTERS
IBM, COMPAQ & MAJOR BRANDS
LARGE SELECTION

MEMORY EXPANSION • HARD DRIVES • MONITORS • KEYBOARDS • CONTROLLERS & SOFTWARE

Computers from $189 Monitors from $49
CGA Color Monitors $129
Color Printers $249
TANDY NOTEBOOK Computer $299

FREE CATALOG
214-276-8072
P.O. Box 461782
Dept. PCC
Garland, TX 75046-1782
FAX & BBS 214-272-7900

CIRCLE 504 ON READER SERVICE CARD

New York's Best BBS
Since 1984
The Invention Factory
Online Software & E-mail Exchange

Free software for new users!
More than 14 Gigabytes of Shareware & Freeware files.
48 USR 16.8 v.32/bis modems.
INTERNET/Usenet E-Mail.
Thousands of game programs.
Over 3000 online conferences.
Very large and well organized
Adult Files Section.

To browse the system and register online by modem call:
212-274-8110
Amex, Master & Visa

CIRCLE 505 ON READER SERVICE CARD

TPS Electronics

BAR CODE SCANNERS AND SOFTWARE FOR ALL PCs, PS/2s & MACS

- Connect to keyboard port of computer
- Input bar code data into any program
- Integrated Laser " Wedge "
- Dos, Unix, Mac compatible
- Laser, CCD, Wand, "In-Counter" or slot input
- Magnetic stripe (credit card) readers
- Portable systems
- MC/VISA/AMEX/P.O./C.O.D.
- 30-Day money-back guarantee
- Direct from manufacturer
- Inventor of Keyboard Wedge for PC/XT/AT & PS/2

TPS Electronics
800-526-5920

2495 Old Middlefield Way
Mountain View, Ca. 94043
415-988-0141 / Fax:415-988-0289
AppleLink: BARCODE

CIRCLE 506 ON READER SERVICE CARD

PAYROLL
WINDOWS or DOS

to license or private label.

Let us do the tedious work of maintaining the tax structures.
Easy to use and it performs the essentials.

CALL 800-SVS PAYS
787-7297

SUN VALLEY SPECIALTIES
Box 6637 Boise, ID 83707

CIRCLE 507 ON READER SERVICE CARD

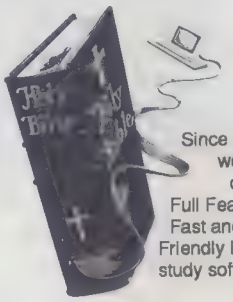
New Version **Use your PC to Master Japanese *and* Chinese**

Enjoy learning Asian languages with *Smart Characters for Students*™ word processor, reading, writing, translating, and learning tool for PCs. Handy on-line references, dictionaries, *furigana* and English annotations speed reading, writing, and translation. Learn and use *kanji* and *hanzi* rapidly and effectively while creating your own documents, compositions, and vocabulary lessons. Version 2.9 for DOS costs just $99.95, and is available in stores or directly from us. Call or write for a free brochure.

知 字

Apropos Customer Service 800-676-4021
8 Belknap Street, Arlington, Massachusetts 02174

BIBLE BOOKSTORE ON DISK!



Since 1981 we have offered Full Featured, Fast and Friendly Bible study software.

800-423-1228
Free Catalog!

BIBLE RESEARCH SYSTEMS
2013 Wells Branch Pkwy. #304
Austin, TX 78728 512-251-7541

FREE PROGRAMS

That's right! Now you can free your software from those troublesome hardware locks. Don't buy a new program because they won't replace your lost or stolen hardware lock.

Our SAFEKEY software programs are guaranteed to UNLOCK the following:

TANGO PRO CADKEY 3D-STUDIO
SURFCAM4 MASTERCAM TOPAS
EZCAM MICROSTATION & MORE

*NEW – If your program uses ANY Rainbow Technologies Inc. lock, protect it from being lost or stolen with the PC-KEY and now the WINKEY

From $300 plus S&H
(609) 390-2799
(609) 390-3750 FAX

IMAGINE THAT
1 EVERGREEN DR. SEAVILLE, NJ 08230

CIRCLE 508 ON READER SERVICE CARD

COMPUTER GRAPHICS

- Animation
- Desktop Publishing
- Photo Retouching
- Computer Illustration
- Multi Media Production

1-800-225-9023

INTERNATIONAL FINE ARTS COLLEGE
17 [illegible] Miami, Florida 33132
Classes start in Jan. & Sept.

Name
Address
City State Zip
Phone ( )
Yr of HS Graduation Age

CIRCLE 509 ON READER SERVICE CARD

CALL 800 CDSOURCE

CD

Dial 1-800-CD-Source

*Clipart Super Clipart $25
*Childrens Putt Putt $22
*Business Business 500 $45
*Games Johnny Rock $39
*Shareware S.V. Platinum $29
*Adult Dream Machine $59

FREE 500 title CD ROM catalog with any purchase

SOURCE

CIRCLE 512 ON READER SERVICE CARD

B.S. & M.S. In Computer Science

- ALL COURSES HOME STUDY
- Approved for tuition reimbursement by leading corporations
- Increase your earning power
- Join students from leading computer companies
- Ada and C++ courses available

FOR FREE INFORMATION CALL 1-800-767-AICS or 1-205-323-6191

AMERICAN INSTITUTE FOR COMPUTER SCIENCES
The leading edge of earning

FIND BUSINESS SOFTWARE FAST

Thousands of titles, descriptions & prices from hundreds of software developers who have software in over 300 market niches, all with excellent user referrals, tech support money-back guarantee.

Catalog $ 25 on disks or by BBS download.

Updated monthly & growing daily. Dealerships available.

Bill $100k Thru Your Computer.

World Class Software, Inc
245 Elwa Pl., West Palm Beach, Fl 33405

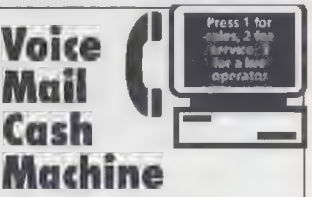
BBS 407-547-8759
Fax 407-547-1703
Tel 407-585-7354

FREE SAMPLES!

FREE LOG ON & DOWNLOAD.

CIRCLE 511 ON READER SERVICE CARD

Voice Mail Cash Machine



Make thousands of dollars effortlessly by installing our voicemail in your 286/386. Use it to answer your home office phone, rent pocket-pagers, advertise products or operate a pay-per-call service using credit cards, passwords or a 900#. Systems start at $295.

Call 24 hours: **800.283.4759**
Int'l & Demo line: 818.718.9560

DemoSource™
The Voice Application Superstore
8345 Reseda Blvd, Ste 202
Northridge, CA 91324 USA

CIRCLE 510 ON READER SERVICE CARD

NUTRITION SOFTWARE - $11.00

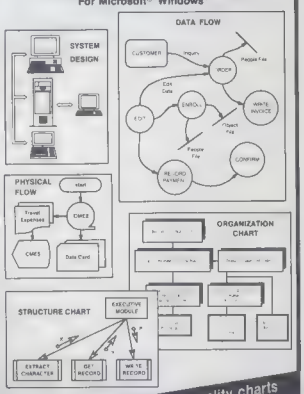
3-disk/3prgm set.
1,200,000 prgms sold!
Analyzes foods, workouts, fat, cholesterol, etc. Creates menues. Provides guidelines. Not shareware, not public domain.
Send $11.00 and specify disk size & IBM or Mac.

SATISFACTION GUARANTEED

OHIO DISTINCTIVE SOFTWARE
4588 Kenny Road,
Columbus, Ohio 43220
619-459-0453

CIRCLE 513 ON READER SERVICE CARD

RFFlow
Professional Flowcharting
For Microsoft® Windows®



Create professional, fine quality charts quickly and easily. Call for free trial disk:
(303) 663-5767 FAX (303) 669-4889

$129.00

RFF ELECTRONICS
1053 Banyan Court, Loveland, CO 80538

CIRCLE 514 ON READER SERVICE CARD

Logos shown were designed with Logo SuperPowe® elements

Logo Design Software

Logo SuperPower ® is a large graphic database. You use one or more "design elements" and modify them to create world-class logos in minutes. There are **over 2,000 logo design elements**, AI.EPS format.

SuperPower 660 (660+ design elements).....$119
Upgrade 500 (500 new design elements).....$99
Upgrade 450 (450 more new elements).....$89
Upgrade 400 (400 more new elements).....$79

Buy any module, or buy them all for just $279.00.
(Buy 1 now - buy rest in 30 days - get all for $279)
For the PC: Requires Corel Draw, A&L; Micrografx, Illustrator, Freehand or similar drawing program.
To order, or for information, call
(800) 648-5646
Decathlon Corp. • 4100 Executive Park Dr.
Cincinnati, OH 45241
Phone (513) 421-1938

CIRCLE 515 ON READER SERVICE CARD

CONSOLIDATED CD ROM

Worldwide Suppliers of CD ROM Software

Always new titles!

- Business
- Clip Art
- Games
- Music
- Religion
- Travel
- Caddies
- Education
- Literature
- Reference
- Shareware
- Adult

CALL TOLL-FREE FOR A FREE CATALOG
1-800-8-CD-ROMS
UNCONDITIONALLY GUARANTEED
RESELLERS WANTED
Multimedia & Memory Expansion
515 67th Avenue • Philadelphia, PA 19126 • USA
(800) 8-CD-ROMS • (215) 276-3657 • Fax (215) 276-3854

CIRCLE 516 ON READER SERVICE CARD

AMIGA • IBM • MAC • WINDOWS

You Are Invited

to sample the world's finest selection of leading shareware.

Presented by the world's largest distributor of software.

Call for information

SMC

SOFTWARE OF THE MONTH CLUB®
5816 DRYDEN PLACE • CARLSBAD, CA 92008

CIRCLE 517 ON READER SERVICE CARD

FREE SOFTWARE

Choose from:

Games, Education, Desktop Publishing, General Interest - Windows™ or DOS

Only $2.50 service charge per collection. Credit Cards Only

MICRO STAR Software Club™

1-800-444-1343

Satisfaction Guaranteed

CIRCLE 518 ON READER SERVICE CARD

DUPLICATION FROM $.49

HIGHEST QUALITY MEDIA

From $.49 (5.25") and $.80 (3.50")

- All Diskette Formats
- Custom Labels
- Diskette Mailers / Accessories
- Assembly Services
- Generous Volume Discounts

FORMATTED DISKETTES

QTY 250	SONY VERBATIM	OEM GENERIC
3.5" DD	$.47	$.45
3.5" HD	$.57	$.53

- 10% Discount on First Order
- DOS, Macintosh, or Custom Formats
- Colored Media add $.05
- Private Labeling/ Volume Discounts

800-255-3142

Diversified Systems Group, Inc.
PO Box 1114, Issaquah WA 98027

CIRCLE 519 ON READER SERVICE CARD

FREE CATALOG

1.800.447.2181

Large Quality Selection Virus-Free Software

PC SHAREWARE

ASP member

1016 Grand Ave. • San Diego, CA 92109
619.272.6673

CIRCLE 523 ON READER SERVICE CARD

Best Files in the USA!

Channel 1®

- 100,000 NEW Shareware Programs
- Special FREE Downloads Area
- INTERNET – Email AND Newsgroups
- Hi Speed 100 line Mega BBS!
- Online Games and Entertainment!
- Adult, Business, Games, Windows, Graphics and Music Libraries
- FREE Daily Financial Markets News

Use Your New V.32/V.32BIS Modem!
No Surcharge

Set Your Modem to 8-N-1 and Dial
617-354-3230

CIRCLE 522 ON READER SERVICE CARD

SHAREWARE

for IBM

Same cost for 3.5" or 5.25"

Ship & Hand only $2/order

REGULAR ITEMS $1.50

XARGON OVERKILL
EXECUTIONER WOLF3D
BIOMENACE KILOBLAST

SPECIAL ITEMS: $2.00

BLAKE STONE (DOS 5/6,386,VGA)
MONSTER BASH DUKE NUKEM 2
RAPTOR (2 HD 3.5" disks, Apogee) $4
ANDROID - Epic's fantastic Pinball!
DOOM (2 HD 3.5" disks) $4

WE HAVE CD'S at GREAT PRICES!

FREE CATALOG !

Visa Mastercard

ComPro Software
248 W. Park Ave. Suite 356
Long Beach NY 11561
1-800-PC-DISCS

CIRCLE 521 ON READER SERVICE CARD

ICA Software

DARE TO COMPARE

Highest Quality
Lowest Price
SHAREWARE
Guaranteed!!!

Free Catalog
800-331-3065

FAX: 203-459-0823
P.O. BOX 272 Monroe, CT 06468-0272

CIRCLE 520 ON READER SERVICE CARD

Slide Imagers®

Overnight
$4.95 Slides & Canons
Digital Output

- Slides/Overheads
- Dye-Sub Output
- Large Color Posters
- Canon Fiery Lasers
- Slide Duplication
- 4x5 Neg/Pos/B&W

Photo CD™
Scans $.90

(800)232-5411

CIRCLE 524 ON READER SERVICE CARD

SOFTWARE LABS

WORLD'S LARGEST SHAREWARE DISTRIBUTOR

Selected by IBM as a supplier for their product testing

Selected by IBM as one of professional, topic-specific library

SIRIUS FREE

Call TOLL FREE or write for our free world famous 92-page catalog with exclusive 12 BONUS DISK offer

8700 148th Avenue, NE
Redmond, WA 98052

800-569-7900
FAX: 206-869-1503

CIRCLE 525 ON READER SERVICE CARD

ELECTRONIC PRESENTATION SERVICES®

Kodak

8 Hour Digital Output $3.99 Slides
Limited Time Offer
Mail In Orders Only

1-800-240-7600

CIRCLE 526 ON READER SERVICE CARD

Foreign Languages

Software - Hardware - Systems

ALL LANGUAGES

Translators -Tutorials -Fonts
Dictionaries -Word Processors
Spell Checkers - Keyboards

Best Prices-Best Source-Best Service

800-308-8883

Convert all English Window apps into any Language $79
English-Japanese Dictionary $29
English-Spanish Translator $39
Six Language Translator $29

Factory direct Hardware & Discounted Software

486 DLC-40 LOADED $645
FAX/MODEMS 14.4 $89 !!!
QuickFax $9 Procomm Plus $59

TransLanguage Inc. Fax714-998-1296

CIRCLE 527 ON READER SERVICE CARD

Gamma UniVerse for Windows

Arabic, Chinese, East/Central/West European, Greek, Hebrew, Indian, IPA, Japanese, Korean, Persian, Russian, Sanskrit, S.E. Asian, Tibetan, Urdu, and more – scalable fonts for Windows to support all the world's languages. Does not require special versions of Windows.

Foreign languages in Windows... featuring quality TrueType fonts!

From $149.95. Call the WinLanguage™ experts with your foreign language needs. We have easy to use solutions for supporting foreign languages in Windows. If after 30 days of using any of our products and following our easy to use documentation, you are not comfortably using the foreign language of your choice in Windows, return the product for a full refund.

Gamma Productions
2130 Sawtelle Blvd. #305, Los Angeles, CA 90025 tel 310.478-6774 fax 310.478-7765

CIRCLE 528 ON READER SERVICE CARD

Computer Checks $24.95

Quicken, MYM, many more!
Continuous and laser
Fully Guaranteed
Best Prices , Best Service!
FREE! 100 Check Window Envelopes With First Order!

Designer CHECKS
P.O. Box 12966A
Birmingham, AL 35202
For ordering info. & brochure call
1-800-239-9222 Ext.98

CIRCLE 529 ON READER SERVICE CARD

Be Your Own PC Expert

Get the most from your PC software and hardware. **How to Maximize Your PC** is a 960 page manual that comes with free diskettes and ready to use programs and utilities. Just $59.95. Deduct $10 when you order with check or credit card! Ask about our quarterly supplements. 400081

30-day no-risk guarantee!

1-800-222-WEKA

WEKA Publishing, Inc.
1077 Bridgeport Ave. Shelton CT 06484

CIRCLE 531 ON READER SERVICE CARD

Rite Hite PRODUCTS

Height Adjustable Ergonomic & Hardware Management Products at DISCOUNT PRICES

• Undermount Keyboard Support

• C.P.U. Holders • Wrist Rests
• Monitor Stands • Mouse Platfcorms

1 800 272-6514

CIRCLE 530 ON READER SERVICE CARD

66% of PC/Computing subscribers buy directly from the ad in front of them. Put your ad in front of them, here.

Get your share. Call PC/Computing Marketplace at

800-825-4237

Source: 1992 Buying Trends Market Study

Jet-Master

Re-usable Jet Printer Refill. Lowest cost/recharge, Black & Color. Waterproof inks.

From $20.95

MacInker

Eliminate ribbon costs. Re-ink your ribbons automatically-5¢ recharge, better than new printing and longer printhead life.

Over 250,000 sold

Epson MacInker 49.95
Universal Cartridge MacInker ..79.95
Multicolor Adapter.....40.00

Call for comprehensive catalog!

Computer Friends, Inc.
14250 NW Science Park Drive
Portland, OR 97229
Order 1-800-547-3303
Tel. (503) 626-2291
Fax (503) 643-5379

CIRCLE 532 ON READER SERVICE CARD

HARD CASE PROTECTION
Your notebook won't feel a thing!

NB-4000
$179.95
Holds computer accessories files and disks (pictured)

NB-3000 .....$149.95
Holds computer & accessories
NB-1000 Holds computer only.....$59.95
w/shoulder strap.....$69.95

• Hard double-shell construction
• Highest quality foam interior
• Lockable • Made in USA

1-800-475-0707
719-531-5535

DOUBLECASE
5350 N Academy Blvd
Colorado Springs CO 80918

CIRCLE 533 ON READER SERVICE CARD

TONER

PRICES STARTING AT $40

Your Cartridge Remanufactured
UPS RETURN INCLUDED

MORE TONER • COLORS
RICHER BLACKS
FULLY TESTED

We now service XEROX 1012, 5012 & 5014 copy cartridges.
Save Even More with our new 40,000 page "Dura-Drum"

1•800•442•6288
DISCOVER/MC/VISA
Southern Cartridge Service, Inc.
33 Mathews Drive
Hilton Head Island, SC 29926

CIRCLE 534 ON READER SERVICE CARD

TM PUBLISHING, INC. • • • • CD-ROM MANIA!

INTERACTIVES

- DIRTY TALK (PC) CD100 ..... $79.95
- DOORS OF PASSION (PC) CD101 ..... $99.95
- DUNGEON OF D★★★★ (PC) CD107 ..... $79.95
- ADULT MOVIE ALMANAC (PC) CD9911 (MAC) CD9910 ..... $99.95
- THE DREAM MACHINE (PC) CD2012 (MAC) CD2011 ..... $69.95
- ADV. of SEYMORE BUTTS (PC) CD2002 (MAC) CD2001 ..... $69.95
- NIGHTWATCH (PC/MAC) CD7052 ..... $69.95
- DIGITAL DANCING (PC/MAC) CD4002 ..... $69.95

ADULT MOVIES

- HOUSE OF DREAMS (PC) CD9009 (MAC) CD9001 ..... $59.95
- SECRETS (PC) CD9012 (MAC) CD9011 ..... $59.95
- NIGHT TRIPS (PC) CD9022 (MAC) CD9021 ..... $69.95
- DIGITAL DANCING (PC/MAC) CD4002 ..... $69.95

CLASSIC MOVIES

- DEEP THROAT (PC) CD100 ..... $29.00
- DEBBIE DOES DALLAS (PC) CD101 ..... $29.00
- DEVIL IN MISS JONES (PC) CDI102 ..... $29.00
- John Holmes PRIVATE FANTASIES (Gay) (PC) CDI103 ..... $59.00
- VIRTUAL VIXENS (PC/MAC) CDZ100 ..... $69.95
- DEEP T★★★ (PC) CDI105 ..... $29.00
- HOT & NASTY AMATURES (PC) CDI106 ..... $29.00
- GIRLS ON GIRLS (PC) CDI107 ..... $29.00
- G.I.F.s that keep on GIFFING (PC) CDI109 ..... $29.00
- LEGENDS OF P★RN II (PC/MAC) CD8001 ..... $69.95
- NEW WAVE H★★KERS (PC/MAC) CD1002 ..... $49.95
- INSATIABLE (PC/MAC) CD1005 ..... $49.95

PHOTO DISCS

- EXTREME DELIGHTS (PC) CD102 ..... $69.95
- PUBLIC FANTASIES (PC) CD104 ..... $99.95
- J. STEPHEN HICKS (PC/MAC) CD8001 ..... $39.95
- ADULT PALATE VOL 1(XX) (PC/MAC) CD9002 ..... $39.95
- HIGH VOLUME NUDES (PC/MAC) CD8002 ..... $39.95

MAIL TO: TM PUBLISHING
2609 S. HIGHLAND DR. PCC 894 LAS VEGAS, NV 89109

PHONE ORDERS: 1-800-696-9292 FAX: 1-702-796-5655

☐AMX ☐CASH ☐CHECK ☐MO ☐VISA ☐MC
NEXT DAY DELIVERY $16.00 • 2ND DAY DELIVERY $9.00
UPS DELIVERY $4.00

FOREIGN ORDER $100 MINIMUM
AIR REGISTERED $50.00 • EXPRESS MAIL $35.00
MUST BE 21 TO ORDER

CIRCLE 535 ON READER SERVICE CARD

ADULT CD-ROMS

Guaranteed Lowest Price! We BEAT any Advertised Price!

INTERACTIVE CDs

Hot!

The Barlow Affairs*
Playboy Playmate® Teri Weigel ..... ~~$49~~ ... $39

Inferno*
Playboy Playmate® Teri Weigel ..... ~~$49~~ ... $39

Virgins 1
2hrs, 5 girls, their first time on video ..... ~~$59~~ ... $49

Dream Machine
Dream Girl adapts to your fantasy ..... ~~$69~~ ... $59

Maddams Family*
Adventure through 3D mansion ..... ~~$59~~ ... $49

Seymore Butts
Follow Seymore & his camera ..... ~~$69~~ ... $59

*Special Edition available for Asia

SPOT LIGHT
Maddams Family
"...offers one of the better examples of how adult CD-ROMs are interactive."
CD-Rom Today Magazine
June 1994

DIGITAL ADULT MOVIES

Baby's Got B_tt
Those lovely scoops of fi_sh ..... ~~$35~~ ... $25

Hidden Obsessions
Penthouse Pet® Janine Lindemulder ..... ~~$35~~ ... $25

SPOT LIGHT
Virgins 1
"...excellent girls! excellent scenes!"
AVN Magazine
January 1994

PHOTO DISCS

Elite American Girls Volumes 1&2
250 photos of top nude American models in each volume ..... ~~$49~~ ..... $35 ea.

Elite European Girls Volumes 1&2
250 photos of top nude European models in each volume ..... ~~$49~~ ..... $35 ea.

Adult Sampler CD $9.95

SUPER SAVER BUNDLES!!

- **Dream Bundle** 3 CD ROM Titles (Dream Machine, Baby's Got B_tt, Inferno) $99
- **Seymore Bundle** 3 CD ROM Titles (Seymore Butts, Baby's Got B_tt, Barlow Affairs) $99
- **Maddams Bundle** 3 CD ROM Titles (Maddams Family, Baby's Got B_tt, Inferno) $99
- **Virgins Bundle** 3 CD ROM Titles (Virgins 1, Baby's Got B_tt, Barlow Affairs) $99
- **Gorgeous Girls Bundle** 3 CD ROM Titles (Virgins 1, Elite American & European Girls) $99

CD DISCOUNT

CK/MO to: CD DISCOUNT
21115 Devonshire St. #304 Chatsworth, CA 91311
Domestic: $5.95 for shipping & handling.
Foreign: $50.00 for shipping & handling.

Foreign orders: 818-772-6969
Fax orders: 818-773-8314

VISA/MC ORDERS : 1-800-990-9077
Must be 18 or older to order. Void where prohibited and restricted.

CIRCLE 539 ON READER SERVICE CARD

Nationwide TOLL FREE Access Line = 950-1288

Adult Video

24 hr Shopping

USE YOUR COMPUTER to shop the hottest selection of Adult videos and novelities.

ONLINE GRAPHICS allow you to view the video box covers before purchasing

Take Two, Inc.'s Adult Video Network

Dial By Modem 950-1288
At user ID type: TAKE2
All modem speeds: 8/N/1

Complete details provided during your call

Computer Shopping

For Adults Only - Must be 18 yrs of age or older

Unleash the power of your modem

The Exchange®

Bulletin Board System
The only all-files BBS you'll ever need

Thousands of Free Programs

- Windows
- DOS
- OS2
- Word Processing
- Database
- Games
- Adult Photos (Gifs)
- Animated Adult Movies
- E-Mail
- Live Chat & More
- Now offering Internet access
- Local Access from over 600 Cities

Great for beginners & advanced users of all ages

We're only a phone call away!
Modem: 516/579-5550
Supporting up to 14.4 Kbs, N-8-1 Full Duplex

CIRCLE 537 ON READER SERVICE CARD

*FREE ADULT CD-ROM SAMPLER 1-800-882-6959

Brand new 94 sampler features 28 HOT adult demos, including Seymore Butts II.

Why pay retail?

We will beat **any** price printed in this magazine

Call us LAST for :

- Lowest Prices
- Finest Quality
- Largest Selection
- Full Service
- Tech Support

LASER CONCEPTS
The first and still the best
20929-47 Ventura Blvd #323
Woodland Hills CA 91364
Product info. (818)884-9437
*$6.95 S&H - Must be 18+
Hours 10 - 6 Mon.-Fri. Pacific Standard

CIRCLE 538 ON READER SERVICE CARD

HUSTLER Online

The Best Reason Yet To Own A Modem

Introducing the premium adult bulletin board service. Hustler Online is an electronic library of Hustler Magazine's vast archives including material that was never published.

Hustler Online is extremely easy to use. In fact, you already know how to use it because we use the same interface you're used to whether it is Windows or Macintosh.

Our state of the art system is continously updated with the highest quality, most provocative images you've ever seen on your computer. And to ensure that you only get the images you want, we've incorporated lightning fast 256 color previews.

To sign up simply set your communications software to 8-N-1 and call:

(816) 472-4648

Or call (816) ~~472-4646~~ for a free color brochure

Material is of an adult nature. Must be over 18 years of age. Discreetly billed. Hustler is a registered trademark of HG Publications, Inc.

CIRCLE 540 ON READER SERVICE CARD

FOR ADULTS ONLY

FREE ACCESS

HOT HOT

NO CREDIT CARD NEEDED

- Sexy Talk with Singles/Couples
- Over 100,000 Adult GIF, Shareware, Windows/DOS Files — updated daily!
- Unlimited Downloads • Call NOW!

USE YOUR MODEM TO DIAL
1-809-563-0116

Callers must be 21 or older!
Long distance rates apply.

CIRCLE 541 ON READER SERVICE CARD

ourmet gallery

Gourmet Gallery BBS is one of the nation's largest and most popular sources of exciting adult images. With at least 50 new GIF images per week you have access to an unlimited supply of GIF's. We also offer thumbnail GIF's, so you only download the images *you* want. We have 2 popular adult & shareware CD-ROMs online! 16 lines available at 1200 - 14.4k. 7+ gigabytes of files online, and growing. Prices as low as $2.75/meg, no charge for unlimited connect time.

Tired of GIF deja vu? Call us.

adults only, please

408.956.5656

CIRCLE 543 ON READER SERVICE CARD

FREE
INTERACTIVE
ADULT CD-ROM SAMPLER
Add $4.95 for Postage/Handling in U.S.
ORDER TOLL FREE - MUST BE 18+
1.800.697.4947
INTERNATIONAL ORDERS: 714.669.1818
FAX: 714.573.0948
P.O. BOX 3684 TUSTIN, CA. 92681 U.S.A
P·I·X·I·S
INTERACTIVE

CIRCLE 544 ON READER SERVICE CARD

Secret City
MULTIMEDIA INC.
FREE CD ROM
ADULT SAMPLER
SAMPLE DEMOS OF THE FINEST IN ADULT ENTERTAINMENT SEND $4.75 S/H.
LOWEST PRICES! • HOTTEST TITLES!

PENTHOUSE Interactive	$69.99
DREAM MACHINE Interactive	$59.99
HOT WIRE Interactive	$58.99
SEYMORE BUTTS Interactive	$54.99
NIGHTWATCH Interactive	$49.99
MADDAMS FAMILY Interactive	$42.99
CAFE FLESH Movie	$27.99
HIDDEN OBSESSIONS Movie	$27.99
NEW WAVE HookERS 1, 2 Movie	$27.99
SECRETS Movie	$27.99
TRACI, I LOVE YOU Movie	$27.99
ADULT PALATE Photos	$27.99
AMERICAN GIRLS 1, 2 Photos	$27.99
ASIAN PALATE Photos	$27.99
HOT PEPPERS Photos	$36.99

OVER 100 TITLES AVAILABLE
MUST BE 21 TO ORDER
800-643-4205
(818) 786-0995 • FAX (818) 786-7018
5818 Van Nuys Blvd., Van Nuys, CA 91401

CIRCLE 545 ON READER SERVICE CARD

MISSION
ADVENTURES OF SEYMORE BUTTS

GIFS

Adult Reference Library	39
Amateur Models	44
American Girls	39
B. Babes 2	44
Women on Wheels	44

INTERACTIVE

101 Sexual Postions 2	49
Adult Movie Almanac	69
Adult Sampler "NEW"	14
Adventures Seymore 2	69
Buttman's Vacation	39
Digital Dancing	39
Dirty Debutantes	59
NeuroDancer	69
Night Watch	49
Scissors N Stones	69
Virgins	49
Winner Take All	49

MOVIES

Barlow Affair	29
Best of Inferno	29
Blonde Justice	29
Cafe Flesh	29
Hidden Obsessions QT	29
House of Dreams	39
House Sleeping Beauty	39
Racquel Released	29
Traci I Love You	29
Wicked	39

NIGHTWATCH II
You will make the rounds with your host, the luscious PJ Sparx. If you make the right choices PJ might consider extending your stay. This game utilizes the best video compression available. $69.

DREAM MACHINE
Navigate through a 3D world where your ultimate fantasies come alive. The Dream Machine's beautiful hostess will lead you on an interactive journey through your sexual imagination. $69.

VIRTUAL VIXENS
Save your friend from evil Crystal, who has imprisoned him in a VR World, for his failure to please her. A Virtual Reality adventure with 3D animation and graphics combined with live motion video and a realistic interface. $79.

We Are International Sales Specialists.

To Order: Mission Control Software • 356 Glenwood Ave. • PCC0794 • E. Orange, NJ 07017. MC, Visa, Discover, Checks & Money Orders. Checks held 14 days. Please include phone #. Shipping $5 via UPS. 2 Day $7., Int'l Shipping $20 Minimum. For Our Color Catalogue, Send $2. Overseas Send $5. Free catalogue with order! Over 21 to Order.

(800) 999-7995
CALL NOW FOR OUR DAILY SPECIALS!

CIRCLE 546 ON READER SERVICE CARD

MAGICAL escapes BBS
- SHEILA'S COMPUTER MATCHMAKER.
- HOT TALK WITH OUR 1000'S OF MALE & FEMALE SUBSCRIBERS.
- ORIGINAL GIFS NOT AVAILABLE ON ANY OTHER BBS.
- LATEST GAMES & SEX TRIVIA CONTEST WITH REAL PRIZES
- ACCESS TO SIX SWINGER CONTACT MAGAZINES!
- *NEW* ON-LINE SHOPPING WITH OUR MAGICAL ESCAPES® EXCLUSIVE SHOPPING MALL OF HARD TO FIND BOOKS, MAGAZINES, CD-ROM, VIDEOS, INTERACTIVES & MORE!

BBS PERSONALS Reach Out & Meet Someone!
702-796-7300
TO ORDER : 702-796-9966
TO LOG ON:702-796-7300
MUST BE 21 TO ORDER
MAIL TO: TM PUBLISHING
PO BOX 17070 DEPT PCC 894
LAS VEGAS NV 89109

CIRCLE 560 ON READER SERVICE CARD

FOR ADULTS ONLY
You must be over 21 to access

LIFESTYLE
Meet sexy singles/couples on the world's hottest adult chat system—Lifestyle BBS.
Less than .30 per hour.
Log on: 516-689-5390

AND

GRAFIX
Computer pictures so hot they could melt your modem.
Log on: 516-689-2853

SUPER CHEAP • 100% PRIVATE

CIRCLE 548 ON READER SERVICE CARD

STARWARE
PUBLISHING CORPORATION
Call 1-800-354-5353
to order or for our FREE catalog
or FAX 305-426-9801
Foreign orders call 305-426-4562
NEW RELEASES!!
After Midnight
Adult Movie Screen Saver
and
ADVENTURES OF MIKKI FINN
QuickTime Movie for Double-Spin CD-ROM Drives Only
STARWARE BBS 305-428-0012

CIRCLE 547 ON READER SERVICE CARD

Put your ad here and you'll increase your sales!

Two-thirds of PC/Computing subscribers know the Marketplace section and more than three-quarters of them took action in the past 12 months as a result of reading an ad.

Took action as a result of reading an ad(net)	76%
Made a note of the information in the advertisement	49%
Purchased the product advertised/decided to purchase in the near future	35%
Requested additional information	30%

Put PC/Computing Marketplace to work for you.
800 825-4237.

Source: '93 PC/Computing Marketplace Subscriber study

FREE CD-ROM DISC!

With Any CD-ROM Disc Purchase, CD-STONE, Our NEW! Benchmark, Test, & Utilities CD-ROM Disc for DOS & Windows. Designed To Help You Obtain Maximum Performance from Your Computer and Installed CD-ROM Drive! If Purchased Separately CD-STONE is $19.95 plus $6.00 for S. & H.

ForBidden Subjects!™

WARNING!
This Disc Contains Information No One Wants You To Know About!

This Disc Contains Information About Hacking, Phreaking, Tone Box Info., Anarchy Subculture, Magic, Internet & Computer Security Secrets, FBI & Police Net Files, Virus Code, Sick & Twisted Graphics, UFO, Occult, & A Whole Lot More. Everything Fun and Interesting That Absolutely No One Wants You To Know About! Includes MegaSearch "Hypertext Search" for those Fascinating Late Night Text Searches, & (If You Dare) for BBS there's files.dbs & Our New Mouseable Remote User "Hypertext Search!" Interface & BBS Door! "MegaTerminal & "MegaDoor"

SRP $79.00 OUR EXCLUSIVE SPECIAL PRICE! **$39.00 EACH**

BEST of SHAREWARE™

Best Yet.

6 CD-ROM DISCS WITH THE WORLDS EASIEST CD-ROM INTERFACE FOR WINDOWS & DOS
OVER 26,000 VIRUS FREE FILES
$12.95 EA. SEPARATELY OR **$6.66** EA. WHEN YOU GET THE FULL SET FOR
ONLY! $39.95

PC Shareware	SwimSuits
Over 600 Megabytes 100% Virus Free Over 3,440 Files PC Shareware Plus Applications Utilities & More!	Over 425 Megabytes 100% Virus Free Over 1,680 Files 256 Color GIF and BMP Files of Gorgeous Girls in Skimpy Swim Suits
Windows	**PC Games**
Over 580 Megabytes 100% Virus Free Over 3,970 Files Windows Shareware Applications, Utilities, Fonts, Games, Drivers	Over 500 Megabytes 100% Virus Free Over 4,500 Files PC Shareware Games by Apogee Epic Game Bytes Arcade, Action, Adventure
Bizzness	**Sights & Sounds**
Over 460 Megabytes 100% Virus Free Over 8,900 Files Business Shareware Hard to Find Utilities Tools, Fonts, Clip Art	Over 600 Megabytes 100% Virus Free Over 3,400 Files 256 Color GIF Graphics Animated FLI's PC Sound Files

fao Gold™

"The Best of the Best" $39.00 each The Full Set All 3 Only! **$99.00 SET**

Volumes 1, 2, & 3 "Best of the Best"

For Adults Only "GOLD" "Wife Proof Labels"

Each Over 600 MegaBytes Many Not On FAO 123 - 256 Color SVGA Gif's with NO BBS Logos! Plus Animated FLI's, GL's, & DL's, Includes Games, and Fantasy Text Files. SRP $79.00 ea

fao™

3 Disc Set 1,892 Megs contains over 16,000 Files! All 3 Only! **$69.00 SET**

Volumes 1, 2, & 3

For Adults Only "Wife Proof Labels"

256 Color SVGA GIF's, Plus Animated FLI's, GL's & DL's Includes Games, & Fantasy Text Files. 3 Disc Set 1,892 Megs Over 16,000 plus Adult Files! SRP for this Set of 3 Discs $199.00

T&A 2 The Maxx

IF YOU JUST WANT ONE THIS IS THE ONE TO BUY! **$14.95 EACH**

600 Megabyte Adult CD-ROM Disc

This is Definitely NOT Trains & Airplanes

Over 600 Megabytes - Includes GOCD EXE The Worlds Easiest CD-ROM Interface - 256 Color SVGA Gif's Plus Animated FLI's GL's & DL's Includes Loads of Games, & Fantasy Text Files

Genuine SONY®

Caddies $3.50 each with any $49.00 CD-ROM Disc Purchase
Limit of 10 per customer

VISA

CREDIT CARD AND C.O.D. ORDERS ONLY!
CALL TOLL FREE
1-800-843-7990

PROFIT GROUP 824 E. Ft. Lowell Rd. Tucson, AZ 85719 - Customer Service & Dealer Info (602) 770-0000 - FAX (602) 770-0005

The prices listed above do not include shipping & handling. Special shipping, and shipping to foreign countries is available

CIRCLE 551 ON READER SERVICE CARD

Where Adults Come To Play!

The World's Choice For
HOT MODEM FUN!

- Great For Couples and Singles!
- CHAT LIVE With Thousands of Ladies and Gents in Groups or Private!
- Tons Of Sizzling Hot Message Areas!
- Large GIF and Shareware Libraries!
- Matchmaker "DATING-BASE"!
- Live Competitive Tournament Gaming!
- NEW Modem to Modem Gaming!
- Local Numbers In Over 800 Cities!
- Plus Much Much More!

ODYSSEY ONLINE

CALL NOW BY MODEM For Special Promos & Information On Our Newest Features Including INTERNET Access!

Over 21 **818-358-6968** 8/N/1

CIRCLE 553 ON READER SERVICE CARD

Sexy Software™ SEXY DISKS™ — Sexy Software™ SEXY CD-ROMS™

Sexcapades™ . . . The GAME

The First Adult Game with TRUE SOUND and 256 Color VGA Graphics

The game everyone has been waiting for. For that evening you won't forget with a loved one or group of very close friends. Fulfill your sexual desires. Find our how your partner would really like to make love! Over 80 Color VGA Scenes • Real Voices Guide the Action • Foreplay Option • Play with 2-8 Close Friends. Now supports SoundBlaster™ cards! Reg. price $79. VGA and hard disk required - shipped on high density disks

SPECIAL SALE PRICE $49

CONNOISSEUR COLLECTION ALL NEW! In 256 Color VGA!!

ALL movies have sound - play thru standard speaker or SoundBlaster™

Sexy Disk #CC1 • ★ YOU BE THE STAR ★ The FIRST CUSTOMIZABLE movie. You write the dialog and title

Sexy Disk #CC2 • THE FIRST SOUND MOVIE! The first computer movie with SOUND. See the incredible 256 color VGA graphics while hearing the actual dialog. OURS EXCLUSIVELY!

Sexy Disk #CC3 • THE BEST MOVIE! The best computer movie available. Only for the serious collector. 256 stunning VGA colors

Sexy Disk #CC4 • VOLUPTUOUS MOVIE with Sound! See and hear a symphony of except onally proportioned women

Sexy Disk #CC5 • ODDITIES MOVIE with Sound! See men of incredible proportions and women with unique abilities - UNBELIEVABLE!

Prices: 1 Movie $29. 3 Movies $65. 5 Movies $94

Now You Can Have Your Own GIRLFRIEND™ . . . a sensuous woman living in your computer!

GIRLFRIEND is the first **VIRTUAL WOMAN**. You can watch her, talk to her, ask her questions and relate with her. Over 100 actual VGA photographs allow you to see your girlfriend as you ask her to wear different outfits, and guide her into different sexual activities. As a true artificial intelligence program, **GIRLFRIEND** starts with a 3000 word vocabulary and actually GROWS the more you use it. She will remember your name, your birthday an your likes and dislikes. **GIRLFRIEND** comes with the base software and **GIRLFRIEND LISA.** Additional girls will be added. This program requires 7-10MB of free space

SG3 GIRLFRIEND - Special Introductory Price **$69. FREE** - Second GIRLFRIEND Just Added.
NEW! SG7 GIRLFRIEND TERI - 300+ PICTURES Price **$79.**

ORIGINAL Sexy DISKS - 6 disk set with movies, pictures, games $32

ADD $4 S/H • 3.5" Or FOREIGN ORDERS ADD $2/DISK • IN PA ADD TAX • MUST STATE AGE OVER 21 YEARS.

VISA/MC Orders Only: 800-243-1515 Ext. 600VX / 24 HRS / 7 DAYS

FAX (215) 997-2571 • Or CK/MO to: Sexy Software, P.O. Box 220, Dept. 600VX, Hatfield, PA 19440

SUPER CD-ROM SALE

ALL CD-ROMS: $69 EACH OR 3 FOR $149

LIMITED OFFER – MAY BE WITHDRAWN AT ANY TIME. REG. $99 EACH OR 3 FOR $199

Sexy FLIX – Full Length Digital Movies - Ours Exclusively!

KING D. – The dirtiest dinosaur movie ever made! CRYSTAL HOLLAND stars with prehistoric monsters, cannibals, and oils of special effects

TOO NAUGHTY TO SAY NO – HARRY REEMS and GINGER LYNN star in an erotic daydream in a boarding school for girls. from CABALLERO HOME VIDEO dir SUZE RANDALL

SEX GAMES – When a hacker taps into a computer dating service he is able to program the wildest fantasies of its sexiest member. SHAUNA GRANT stars

Sexcapades . . . The MOVIE – See incredible uses of a mouse and a joystick as a group of friends play our popular Sexcapades game

NO HARD DISK SPACE REQUIRED – WINDOWS NOT REQUIRED

Sexy CD-ROMS

Sexy CD #1 the premiere adult collection – 650 MB of action with over 2500 VGA pictures, stories, cartoons, games, sound files. DARE TO COMPARE!

Sexy CD #2 an exclusive collection containing over 1000 Super VGA pictures (1024 x 768 x 256) and over 300 MB of true 24 bit color. These are pictures that cannot be found anywhere else! The women and the quality are stunning

Sexy CD #3 another collection of over 650 MB of the hottest pictures available. Over 3,000 VGA pictures, movies and utilities that will have you spending days just trying to see it all!

MENU DRIVEN VIEWING - NO DUPLICATION

MIX & MATCH CD-ROMS / Sexy PIX™

COLLEGE GIRLS, DOORS OF PASSION, PINCH OF PEPPER, 3D DREAMGIRLS, DREAM MACHINE, TRACI I LOVE YOU, SEYMOUR BUTTS, WICKED WHISPERS, BODACIOUS BEAUTIES, NORTHERN DELIGHTS 1 & 2, SIZZLE, WOMEN ON WHEELS, DEEP THROAT, DEBBIE DOES DALLAS, ASIAN LADIES, HOT PIX 2, 3, 4, 5, EXOTIC GIRLS, TROPICAL GIRLS, DIGITAL DREAMS, PRINCESS OF PERSIA

CIRCLE 552 ON READER SERVICE CARD

GAY MODEM

FREE ACCESS

Unlimited Chat & Downloads
Gay Owned & Operated
Original Gay GIFs
Chat with Guys
Leather Shopping Mall
Matchmaker
Video Reviews
Video Stars...Donnie Russo, etc.
70 lines up to 16.8k

1-217-792-3671

Use your Modem to Dial
Customer Support Voice Line 415-281-3154

CIRCLE 561 ON READER SERVICE CARD

SEXY MODEM

Call from home or office!

•The Ultimate BBS•

FREE

- UNLIMITED ACCESS
- 100,000 Shareware & GIF's, Windows, Mac and DOC files
- Free Internet Accounts
- Sexy Network Chat with Singles and Couples
- Unlimited Downloads
- Up to 16.8k on all 96 Lines
- New GIF's posted daily by our photographers

1-217-792-3663

Use your modem to access and be over 21 to access
Customer Support Voice Line 415-281-4429

CIRCLE 549 ON READER SERVICE CARD

FREE GIFS!

Download some of the "Sexiest" Images from our Adult On-Line Magazine - FREE!

LACE, which has been rated #1 by its users offers you:

- Positively the best Color Photographs & Scans in the World! GIF's not available on any other BBS!
- VIDEO for Window's files. Watch our models come to life. They talk to you, entice you and show you why they enjoy Adult Modeling.
- GORGEOUS & Sexy Models both Amateur and Professional!
- LOCAL ACCESS #s for over 800 cities in the U.S.
- HIGH SPEED Access available on ALL lines 14.4 down to 1200 baud.

Set your modem to 8-N-1 and your terminal emulation to ANSI and dial:

(818) 709-4275

LACE

the on line adult magazine

Questions? (818) 709-3795 (voice)
Adults Only • Limited Offer

CIRCLE 550 ON READER SERVICE CARD

San Francisco's Premier Adult Gay Men's Online Service has NOW gone Nationwide!

- Local access from over 1,000 US cities!
- Live uncensored group & private chat!
- Online, interactive, multi-player games!
- Lively salon style public forums!
- Over 20,000 Adult rated GIFS & files!
- MatchMaker online databases!
- 50+ lines available 24 hours a day!
- Gay owned and operated, your privacy assured!
- *Much, much more!*

For your local access number, information, & signup, CALL:

(415) 703-8200

Set modem to 8/N/1. You must be 21 or older.

Finally...a national adult Gay men's BBS!

EYE CONTACT

Technolust

Sit Back in Your Ergonomic Chair—

Somewhere in the recesses of your budget is the money for all this—the best sound and vision you ever experienced, and the most comfortable keyboard and chair you ever set hands and heinie on. Go ahead, do some creative accounting. You know you're worth it.

PHOTOGRAPH BY GEOFFREY NELSON

This Is the Sensurround Ride of Your Life

Doom, Not Gloom: A politically incorrect but great-looking 3-D kill-a-thon, Doom is *the* game to play over a network (or solo).

Doom / id Software / (800) 434-2637 / $40
Circle Reader Service No. 781

Hold on to Your Fillings: Want bazooka bass notes when you drop a bad guy? Plug in Yamaha's YST-M10 speakers. These growlers get down to 80Hz—low enough to rattle your teeth.

YST-M10 / Yamaha / (714) 522-9240 / $149
Circle Reader Service No. 782

Hearing Is Believing: Great speakers need great sound—and Sound Blaster AWE32 card provides booming MIDI tunes. NuReality's Vivid 3D adds even more sonic depth. Plug it in between your PC and speakers to enhance any sound.

Sound Blaster AWE32 / Creative Labs / (408) 428-6600 / $399
Circle Reader Service No. 783

Vivid 3D / NuReality / (800) 501-8086 / $99
Circle Reader Service No. 663

Big Screen: To lose yourself in 3-D, get Mitsubishi's Diamond Pro 21T (center), a 21-inch behemoth with a crystal display and Windows remote-control software for power management and display options.

Diamond Pro 21T / Mitsubishi Electronics / (800) 843-2515 / $2,525
Circle Reader Service No. 785

Make It So: We've seen the effects of repetitive strain—and found the solution. The Floating Arms Keyboard chair supports elbows, wrists, and fingers—just what touch typists need. It looks cool, too.

Floating Arms Keyboard / Workplace Design / (612) 439-4474 / $1,295
Circle Reader Service No. 786

BY MATTHEW J. LAKE

Cut Review Writing Time In Half.

Introducing Employee Appraiser.™

Now there's a faster way to give employees the feedback they deserve. New Employee Appraiser for Windows.

Employee Appraiser is the first software developed by managers, human resource professionals, business professors and labor law experts to help managers write clear, helpful employee reviews.

At the touch of a key, you'll have access to more than 400 professionally written phrases and sentences to help jump start your review writing process. You can use the paragraphs as they are. Customize them a little. Or rewrite them altogether. Whichever you choose, you'll end up with a more accurate, more direct employee appraisal. Or your money back.

"Employee Appraiser essentially automates the writing of job reviews and makes it more convenient to keep important notes on a given worker's performance. It ...can save time and lead to a more thorough report."
Peter H. Lewis,
The New York Times

"Employee Appraiser can help managers avoid many of the most common performance appraisal mistakes."
Bernadette Bantly,
Attorney At Law
Pettit & Martin, San Francisco

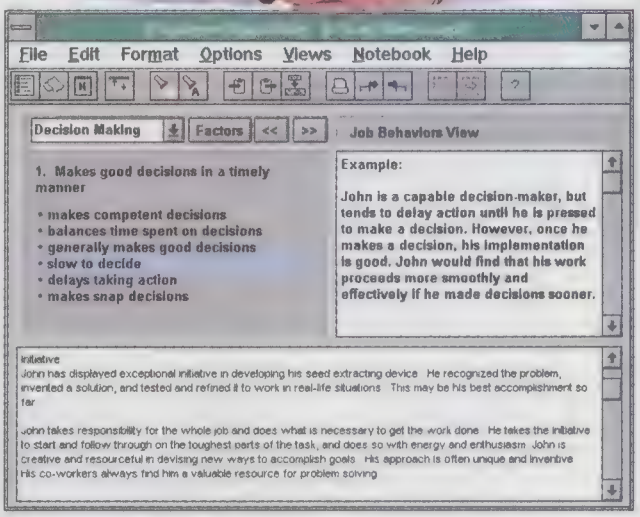
In categories like *initiative, teamwork* and *job knowledge*, each predefined paragraph gives you a concrete example to start with. We call it computer assisted writing. You'll call it the cure for employee review writer's block.

As you move through the appraisal, you can edit and personalize the sample text to fit the employee's situation, offer clear strategies for improvement, and recall important specific events you've collected in the Manager's Notebook. When you're finished, you can even check the entire document for inappropriate language with the built-in Labor Law Scan Glossary from the experts at Pettit & Martin. It just may be the best manager's tool ever invented to help develop people, your company's most valuable resource.

Circle 165 on reader service card.

FEATURES:

- Over 400 real-world examples from actual evaluations
- Word-scanning glossary to check for inappropriate language
- 100,000 word spell-checker
- Password system for document security
- Special manager's section for tips on preparing for evaluation meetings



Simply put, Employee Appraiser gives you a head start to better employee reviews. Your employees will get the feedback they deserve and you'll know you've said the right thing, in the right way. In just half the time.

Only $99!* Order Now!
30-Day Money Back Guarantee!

1-800-809-9920
Ask for Priority Code PCC1

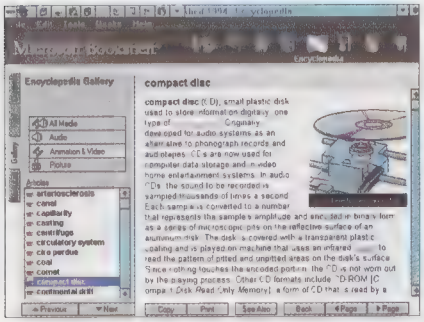
AUSTIN-HAYNE™

© 1994 Austin-Hayne Corp. Employee Appraiser is a trademark of Austin-Hayne Corp. All other trademarks are the property of their respective companies. All rights reserved.
*Shipping & Handling $7.50. International shipping will be extra.

CD-RONWhite

Spin a Book

What CD-ROM needs is a killer app. Not just something good, but something that would convince your boss or spouse that a CD would actually *save* money. That title has finally arrived, along with a bunch of fun, weird, and wacky discs—the *real* reasons we want a new CD-ROM drive.



Mo' Better Books: Bookshelf throws you a title-bar full of reference books.

MICROSOFT BOOKSHELF 1994 EDITION ●●●●

Bookshelf's collection of reference books promised to be CD-ROM's killer app when it first came out years ago. But the interface was clunky and the choice of works puzzling. This edition lives up to its early promise—almost.

The roster of new references is impressive: *The Columbia Dictionary of Quotations* features spoken versions of many famous quotes. Then there's *The American Heritage Dictionary of the English Language,* which pronounces more than 80,000 of its 350,000 words. Two other newcomers, *The Original Roget's Thesaurus* and *The People's Chronology,* join three new editions of updated books: *The Concise Columbia Encyclopedia, The Hammond World Atlas,* and *The World Almanac and Book of Facts 1994.*

The number of video bites and animations is a paltry 60, but what the hey. With a new and easy interface, a Windows toolbar called QuickShelf for quick and easy access to any or all references, and wicked-fast searches, what more do you want?

Two things, actually. Bookshelf's handy menu item to copy a reference entry directly into Word for Windows isn't enough—what about WordPerfect and Ami Pro? Also, when you paste in an entry, Bookshelf adds a three- to five-line copyright notice that is some lawyer's idea of a good read. This is not a benefit for Bookshelf users, and whenever a CD goes out of its way to hassle people, it won't get our coveted five-disk rating.

Microsoft Bookshelf 1994 Edition / Microsoft Corp. / (800) 426-9400 / (206) 939-8661 / $99
Circle No. 771 on Reader Service Card

REDSHIFT ●●●●

If you don't have an abiding interest in the stars, you may think RedShift is an elaborate waste of time. But if you're that jaded, you'll miss a beautiful, fascinating experience. RedShift is not your average Windows astronomy program—we've seen those before and were nearly hospitalized with the yawns. Anything you could want from a pumped-up planetarium—from vast panoramas to low, sweeping flybys over alien terrain—you can get from RedShift. The color photography is beautiful, and the way it lets you play with the universe is totally absorbing. This is an elaborate use—not waste—of time.

The Final Frontier: RedShift boldly goes anywhere in the galaxy.

RedShift / Maris Multimedia / (800) 336-0185 / $64.95
Circle No. 772 on Reader Service Card

MCGRAW-HILL MULTIMEDIA ENCYCLOPEDIA OF SCIENCE & TECHNOLOGY ●●●

You have to be a major wonk to get off on this vast repository of science—and that's not a knock. Everyone at *PC Computing* is fairly wonky, and all of us who saw it were impressed. But despite its well-done narrated animations and illustrations, which explain science in ways words alone could never do, this is still not a CD for everyone. The text is more akin to *Scientific American* than *Discover,* and you'll find lots of references to analog computers but none to IBM or Intel (which is actually a pleasant change). You've got to have a serious need for the Multimedia Encyclopedia of Science & Technology to cough up the $1,300 price, but if you have such a need, it's still $600 cheaper than the 20-volume printed version. So weigh this: $1,300 will buy this disc or every multimedia game in the known universe. Which you would rather buy tells you if you're a true wonk or just a wonk impersonator.

McGraw-Hill Multimedia Encyclopedia of Science & Technology / McGraw-Hill / (800) 233-1128 / $1,300
Circle No. 773 on Reader Service Card

●●●●● *Trade in your firstborn for this one* ●●●● *Trade in your second-born*
●●● *This pup's a keeper* ●● *OK for now* ● *OK for Frisbee practice*

PHOTOGRAPH BY JAMES McGOON

CD-RONWhite

Do I Hear Six Million? In Millennium Auction, eavesdropping is key.

MILLENNIUM AUCTION

What's this? An intelligent, nonviolent game for adults that's really fun to play? Millennium Auction has the appeal of classic Monopoly combined with the modern pizazz of multimedia. It allows up to four players to compete in a future bidding war for real and fictional pieces of art, as well as artifacts of history such as Bill Clinton's sax and the first pair of sexual androids. Interspersed with the bidding are radio, TV, and news reports that may affect the value of the objects when the players later sell them on the open market. The winner is the person whose purchases garner the most wealth.

This Windows CD adds fantastic 3-D CAD animations and imaginative settings that give it a certain virtual-reality touch. All this is coupled with wit and satire (Marilyn Quayle is head of an international version of the NEA). There were only two flaws in the beta version we tested. One is intentional: The game is designed to last only an hour or so, which left me wanting more. The second is accidental: There's a virtually surefire loophole to win—if winning is more important to you than playing the game. What is the loophole? I'll never tell.

Millennium Auction / Eidolon / (718) 884-7095 / $69.95
Circle No. 774 on Reader Service Card

GUS GOES TO CYBERTOWN

Send the grown-ups out of the room. This Windows CD is for children only—the younger, the better. Gus Goes to CyberTown is a click-and-surprise exploratorium in the tradition of Arthur's Teacher Trouble: Kids click on various objects on the screen and are treated to a game, a video, a bit of slapstick comedy—or sometimes a spoken and syrupy homily ("Cyberbugs are always cool and share with others"). Although supposedly for ages three to seven, any kid old enough to say "Mortal Kombat" will scoff at the simple cartoons and games that teach fundamental skills, such as working with shapes. But for toddlers and preschoolers, it's a fine find. One complaint: A human chronology gives the impression that "pre-man," whatever that is, lived at the same time as the dinosaurs.

Gus Goes to CyberTown / Modern Media Ventures / (800) 530-5080 / (415) 546-1515 / $39.95
Circle No. 775 on Reader Service Card

JOB POWER SOURCE

Unhappy with your job? Don't even have a job? Job Power Source will do one of two things for you: Either it will lead you through an intense process of self-examination to your true calling, or you'll spend so much time reading the CD's 11 books, watching its videos, and filling out questionnaires that you won't have time to worry about your current employment situation.

Job Power Source is not a cure-all for your job woes. It won't analyze your answers and spin out the perfect solution. It requires a lot of input and thought. But if you don't get a new job after exploring its material on interviews, résumés, letters, and the best job markets, then just forget it and go on welfare.

Job Power Source / Infobusiness / (800) 657-5300 / (801) 221-1100 / $49.95
Circle No. 776 on Reader Service Card

DENNIS MILLER THAT'S NEWS TO ME

OK, listen up. It's this simple: You think Dennis Miller is the coolest newscaster since Paul Revere, and you want the ability to select the topics he tells jokes about. Got a few sawbucks for this Windows CD? Then buy it. But if you think Dennis-baby is a relentless esoterica-dropper who will go catatonic in a few years when that mane of his falls out and he starts looking like Gabby Hayes, forget it.

Dennis Miller That's News to Me / Sanctuary Woods / (800) 943-3664 / (415) 578-6340 / $29.95
Circle No. 777 on Reader Service Card

THE EXOTIC GARDEN

There's a fundamental flaw in this disc: You can't haul a multimedia PC through the narcissus and calla lilies. But I like The Exotic Garden all the same. The photographs of flowers and plants are beautiful. The narrated, time-lapse video of growing plants is fascinating and informative. And you can create lists of plants based on their ease of growth and preferred climates, then read in detail about the ones that match your criteria.

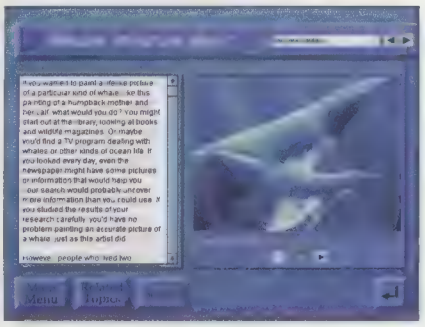
Might as well admit it. The reason I like the CD is that I'm entering that awkward phase of middle-age: Too old for Motorhead, too young for Manilow. At this stage, some primal instinct makes me want to grow a garden. But I'll never feel the same about eating a tomato now that I've been told it's a swollen ovary.

The Exotic Garden / VT Productions / (408) 464-1552 / $49.95
Circle No. 778 on Reader Service Card

IN THE COMPANY OF WHALES

The Discovery Channel wants you to watch several tons of blubber swimming in a window the size of a can of tuna. Fortunately, In the Company of Whales is much better than it sounds. Based on the documentary of the same name, it shows just about everything you'd want to know about whales in photos, video, and animation. Only one complaint: The section on whale singing has someone talking over all the songs. He should shut up and let the whales sing for themselves.

In the Company of Whales / Discovery Communications / (301) 986-0444 / $49.95
Circle No. 779 on Reader Service Card



Massive Marine Mammals: The Discovery Channel's CD cetaceans.

PC Computing (ISSN 0899-1847) is published monthly by Ziff-Davis Publishing Company, a division of Ziff Communications Company, One Park Ave., New York, NY 10016. Second-class postage paid at New York, NY 10016 and at additional mailing offices. Postmaster: Send address changes to PC Computing, P.O. Box 58229, Boulder, CO 80322-8229. Printed in the U.S.A. Canada Post International Publications Mail Product (Canadian Distribution) Sales Agreement No. 278513. The Canadian GST registration number is R123669673.

All the hell-bent

FURY

of Hurricane

TIFFANY.

Without the costly

GOVERNMENT

cleanup.

THE WINDS are whipping into a frenzy and your senses are jamming on a brand new frequency. You're in the eye of Sound Blaster,™ where all the hottest games and software are made to be played. Sound Blaster sound cards set the sound standard. And with Sound Blaster 16 SCSI-2™ and Sound Blaster 16 MultiCD,™ you get 16-bit super-realistic audio quality. So, call 1-800-998-5227 and crank up your wildest CDs or venture into the hurricane from hell. But if it gets too heavy, be prepared to evacuate.

CREATIVE™

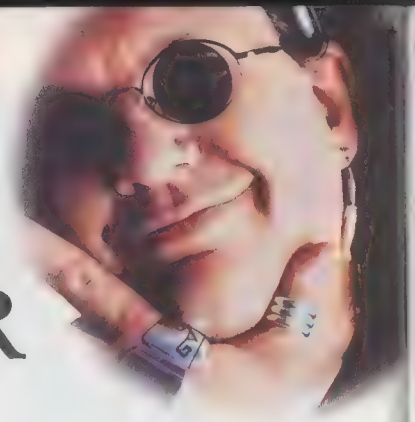
CREATIVE LABS, INC.

Wake up the rest of your brain.

Circle 135 on reader service card.

©1994 CREATIVE TECHNOLOGY LTD. SOUNDBLASTER, SOUND BLASTER 16 SCSI-2, SOUND BLASTER 16 MULTICD AND THE SOUND BLASTER AND CREATIVE LOGO ARE TRADEMARKS OF CREATIVE TECHNOLOGY LTD. ALL OTHER TRADEMARKS ARE THE PROPERTY OF THEIR RESPECTIVE OWNERS. US INQUIRIES: CREATIVE LABS 408-428-6600. INTERNATIONAL INQUIRIES: CREATIVE TECHNOLOGY LTD. SINGAPORE. TEL 65-773-0233 FAX 65-773-0353

PennJillette



I'M A VIRTUAL STAR

I've been grumbling forever about "virtual reality." I really wish Jaron Lanier's claim to fame was having the best dreads on a white guy (even counting Uma Thurman's ex-husband in *True Romance*), not that coinage. Jaron's great, but man, VR? Who needs that noise? A nice idea for displaying information was turned into some nonexistent diabolical world that is supposed to be qualitatively different from other showbiz. What a crock.

My writer friend, Thania St. John, was writing a Fox pilot about VR. She thought that since I wrote a computer column (people who don't read me regularly—like my editors—think I write a computer column), I could tell her about VR. I told her VR is watching one TV with each eye while wearing a funny hat and glove. So she wrote a pilot where VR means psychedelic clown makeup and everyone's on fire. Showbiz.

VR TV There was a part for a big, long-haired, obnoxious neighbor, and they didn't even audition anyone but me. They called it *Avenging Angel,* but that was already a movie (as I remember it, high-school student by day, kung fu prostitute by night—it was a sequel starring Betsy Russell, who, except for marrying a Van Patten, could have been mentioned on this page as often as Gary Oldman's ex-wife). It then became *The V.R. Project,* but if Fox ever shows it, you can bet it'll probably be called something like *Virtual Strangers.*

Lori Singer (*Footloose,* and naked in *Short Cuts*) plays a phone repair person (she had a prop tool belt) who is able to call people on the phone and pull them into "VR." In VR, she has colorful adventures, finds out more about herself, and has sexual tension with wiseacres—just as in pre-VR TV.

My character gets pulled into VR, which means they really hanged *me* on a 90-foot crane over Santa Monica and they really lit *me* on fire. It's me on fire—you can see my face—but there was a stuntman for the sexual tension. From each according to his ability, to each according to her need.

License to Kill? Is this a good thing? Is it good for me to help make the words *virtual reality* nothing more than a goofy TV premise? Is this an efficient way to stop the nuts like the Washington State government from a bill that goes something like this? (I didn't make this up.)

"NEW SECTION. Sec. 706 (1) A license is required for the commercial use of virtual-reality technology for entertainment or purposes other then bona fide education, training, research, and development."

Where VR is defined: "NEW SECTION. Sec. 702 (4) 'Virtual Reality' means any computer or other electronic technology that creates an enhanced illusion of three-dimensional, real-time, or near–real-time interactive reality through the use of software, specialized hardware, holograms, gloves, masks, glasses, computer guns, or other items capable of producing visual, audio, and sensory effects of verisimilitude beyond those available with a personal computer."

The flame on the Net is that Senator Phil Talmadge and his crew are trying to convince the Washington state legislature that VR will permit someone to create a realistic illusion of killing another person, and that such an illusion will make it easier for someone to go and actually commit such a crime outside of VR. It's all part of the current sociopathic movement to reduce violence by muzzling artists.

Nonexistent **DIABOLICAL WORLD** *. . . Where* **VR** *means* **PSYCHEDELIC** *clown makeup . . . It'll be like banning Superman's* **X-RAY VISION.**

So let's fight fire with fire. (Did I mention that I was really on fire? This whole page should be about me being on fire, but they didn't use computers, they used petroleum products and a lighter.) If politicians don't know fiction when it bites them, let's give them *The VR Pilot.* It's funny and exciting, and has nothing to do with reality. It's taking kitsch-phrase hype and then turning out comic-book technology. And if anything can take the reality out of virtual reality, TV can do it. If political leeches want to ban the kind of VR they see on this show, that's fine. It'll be like banning Superman's X-ray vision.

I hope I did the right thing. I hope the check clears.

PHOTOGRAPH BY JAMES McGOON ILLUSTRATION BY GERALD FRAMPTON

NEW 486 NOTEBOOK

intel inside

ACTIVE MATRIX AND DUAL-SCAN COLOR FOR UNDER $3000

DELL® LATITUDE™

$2999

BUSINESS LEASE: $111/MO.

- 4MB RAM
- 260MB HARD DRIVE
- 8.4" ACTIVE MATRIX TFT COLOR DISPLAY

ORDER CODE #600003

DELL BEST BUY

DELL LATITUDE MOBILE POWERPACK

$2699

BUSINESS LEASE: $100/MO.

- 8MB RAM
- 170MB HARD DRIVE
- 9.5" DUAL SCAN STN COLOR DISPLAY
- 14.4 FAX MODEM
- EXTRA BATTERY
- ATTACHE CARRYING CASE

ORDER CODE #600004

DELL LATITUDE

$2199

BUSINESS LEASE: $81/MO.

- 4MB RAM
- 170MB HARD DRIVE
- 9.5" DUAL SCAN STN COLOR DISPLAY

ORDER CODE #600005

FEATURES COMMON TO THESE CONFIGURATIONS:

- INTEL® i486™ SX SL-ENHANCED 33MHz PROCESSOR
- LOCAL BUS VIDEO WITH 512K VRAM
- TYPE II/III PCMCIA
- 3.5" DISKETTE DRIVE
- NiMH BATTERY
- MS-DOS 6.2/WINDOWS 3.1
- DIMENSIONS: 8.6" x 11.7" x 1.7"
- WEIGHT: 6.4 LBS.
- COMMWORKS (5 COMMUNICATION TOOLS IN 1 PACKAGE)
- AMERICA ONLINE
- RADIOMAIL

If you happen to find a notebook that can do more for less, and has dedicated notebook support, kick your heels together. And then buy it.

DELL™

To Order, Call

800-626-9534

Keycode #11XCQ

HOURS: MON-FRI 7AM-9PM CT • SAT 10AM-6PM CT • SUN 12PM-5PM CT
CANADA* 800-668-3021

MING
S.

Hz
UM

XPS P90
YSTEM

9*

6/MO.
019

" CRT, NI)
ITH 1MB

ACHE
E (3.5")
ARD
OSOFT
OUSE

SX2

450SV
YSTEM

9*

2/MO.
037

1" CRT)
L BUS VIDEO
E (3.5")
ARD
OSOFT
OUSE

60MHz PENTIUM BEST BUY

DELL DIMENSION XPS P60
PENTIUM 60MHz SYSTEM

$2599*

BUSINESS LEASE: $96/MO.
ORDER CODE #500020

- 8MB RAM
- 528MB HARD DRIVE
- VS15 MONITOR (15" CRT, NI)
- PCI VIDEO CARD WITH 1MB VIDEO RAM
- 2X MULTI-SESSION CD ROM DRIVE
- 256KB EXTERNAL CACHE
- ONE DISKETTE DRIVE (3.5")
- SPACESAVER KEYBOARD
- MS-DOS 6.2/MICROSOFT WINDOWS 3.1/MOUSE

(PICTURED SYSTEM)

33MHz SX NETWORK NODE

DELL DIMENSION 433SV
i486 SX 33MHz SYSTEM

$1199*

BUSINESS LEASE: $44/MO.
ORDER CODE #300038

- 4MB RAM
- 210MB HARD DRIVE
- VGA 800 MONITOR (14" CRT)
- ACCELERATED LOCAL BUS VIDEO
- ONE DISKETTE DRIVE (3.5")
- SPACESAVER KEYBOARD
- MS-DOS 6.2/MICROSOFT WINDOWS 3.1/MOUSE

s and promotions not available in Canada or Mexico. ◊Business leasing arranged by f Microsoft Corporation. The Intel Inside and Pentium Processor logos, i486 and m. All rights reserved.

[STILL NO SCREAMING CUSTOMERS.]

CUSTOMER SATISFACTION
J.D. POWER AND ASSOCIATES®
PC USERS • 1993
SM

In their annual quest for the desktop PC with the highest customer satisfaction in the business, J.D. Power and Associates recently surveyed 1,956 business users of desktop PCs.‡ What did they discover? Dell owners were the most satisfied, which meant Dell earned the "J.D. Power and Associates Highest Customer Satisfaction Among Desktop PC Users Award" for 1993.

intel inside

So what makes Dell's customer support so different? We like to think it's programs like SelectCare,℠ which lets you choose different levels of support and pay for only as much as you need. Or there's our guaranteed next-day, on-site service,△ which will put a real live person at your desk.

To get this outstanding service and support, call Dell today. Your PCs will scream. But you won't.

DELL™

To Order, Call
800-626-8261

Keycode #11XCR

HOURS: MON-FRI 7AM-9PM CT • SAT 10AM-6PM CT • SUN 12PM-5PM CT
CANADA* 800-668-3021

MORE SCREA
MACHINE

90MHz PENTIUM BEST BUY

DELL DIMENSION XPS P90
PENTIUM 90MHz SYSTEM

$2899*

BUSINESS LEASE: $107/MO.
ORDER CODE #500017

- 8MB RAM
- 540MB HARD DRIVE
- ENHANCED IDE
- VS15 MONITOR (15" CRT, NI)
- PCI VIDEO CARD WITH 1MB VIDEO RAM
- 2X MULTI-SESSION CD ROM DRIVE
- 256KB EXTERNAL CACHE
- ONE DISKETTE DRIVE (3.5")
- SPACESAVER KEYBOARD
- MS-DOS 6.2/MICROSOFT WINDOWS 3.1/MOUSE

90M PENTI

DELL DIMENSION
PENTIUM 90MHz S

$259

BUSINESS LEASE: $9
ORDER CODE #500

- 8MB RAM
- 540MB HARD DRIVE
- ENHANCED IDE
- VS14 MONITOR (14
- PCI VIDEO CARD W VIDEO RAM
- 256KB EXTERNAL C
- ONE DISKETTE DRIV
- SPACESAVER KEYBO
- MS-DOS 6.2/MICR WINDOWS 3.1/M

MULTIMEDIA/ MS OFFICE

DELL DIMENSION 466V
i486 DX2 66MHz SYSTEM

$2399*

BUSINESS LEASE: $89/MO.
ORDER CODE #300030

- 8MB RAM
- 528MB HARD DRIVE
- VS15 MONITOR (15" CRT, NI)
- ACCELERATED LOCAL BUS VIDEO
- 2X MULTI-SESSION CD ROM DRIVE
- SOUNDBLASTER 16 SOUND CARD WITH PEAVEY® 200 SPEAKERS
- ONE DISKETTE DRIVE (3.5")
- SPACESAVER KEYBOARD
- MS® OFFICE, MS BOOKSHELF ON CD ROM, QUICKEN
- MS-DOS 6.2/MICROSOFT WINDOWS 3.1/MOUSE

100MHz DX4

DELL DIMENSION XPS 4100V
i486 DX4 100MHz SYSTEM

$2199*

BUSINESS LEASE: $81/MO.
ORDER CODE #400013

- 8MB RAM
- 340MB HARD DRIVE
- ENHANCED IDE
- VS14 MONITOR (14" CRT, NI)
- 1MB VL VIDEO CARD
- 256KB EXTERNAL CACHE
- ONE DISKETTE DRIVE (3.5")
- SPACESAVER KEYBOARD
- MS-DOS 6.2/MICROSOFT WINDOWS 3.1/MOUSE

66MHz DX2

DELL DIMENSION 466V
i486 DX2 66MHz SYSTEM

$1899*

BUSINESS LEASE: $70/MO.
ORDER CODE #300019

- 8MB RAM
- 340MB HARD DRIVE
- VS15 MONITOR (15" CRT, NI)
- ACCELERATED LOCAL BUS VIDEO
- ONE DISKETTE DRIVE (3.5")
- SPACESAVER KEYBOARD
- MS-DOS 6.2/MICROSOFT WINDOWS 3.1/MOUSE

50MHz

DELL DIMENSION
i486 SX2 50MHz S

$139

BUSINESS LEASE: $5
ORDER CODE #300

- 4MB RAM
- 210MB HARD DRIVE
- SVGA MONITOR (14
- ACCELERATED LOCA
- ONE DISKETTE DRIV
- SPACESAVER KEYBO
- MS-DOS 6.2/MICR WINDOWS 3.1/M

*Promotional pricing expires 7/31/94. ‡1993 J.D. Power and Associates Desktop Personal Computer Satisfaction Study conducted among 1,956 business user respondents. ★Prices valid in the U.S. only. Some produc Leasing Group, Inc. ΔOn-site service provided by BancTec Service Corp. On-site service not available in certain remote locations. MS-DOS and Microsoft are registered trademarks and Windows is a trademark Pentium are trademarks of Intel Corporation. Peavey is a registered trademark of Peavey Electronics Corporation. Dell disclaims proprietary interest in the marks and names of others. © 1994 Dell Computer Corporat

NEW 90MHz PENTIUM

NEC 3X CD ROM

64-BIT LOCAL BUS VIDEO

1GB ENHANCED IDE DRIVE

DELL DIMENSION™ XPS P90
PENTIUM™ 90MHz SYSTEM

$3599*

BUSINESS LEASE◊: $130/MO.

- 8MB RAM
- 1GB ENHANCED IDE HARD DRIVE
- VS15 MONITOR (15" CRT, NI)
- 64-BIT #9 PCI 2MB VRAM VIDEO CARD
- NEC 3X CD ROM DRIVE (450KB/SEC. TRANSFER RATE)
- 256KB EXTERNAL CACHE
- ONE DISKETTE DRIVE (3.5")
- SPACESAVER KEYBOARD
- MS-DOS® 6.2/MICROSOFT® WINDOWS™ 3.1/MOUSE

ORDER CODE **#500018**

Our new Pentium comes complete with a high-speed PCI bus so you can get screaming performance out of all your business applications.

DELL™

To Order, Call

800-247-5509

Keycode #11XG4

HOURS: MON-FRI 7AM-9PM CT • SAT 10AM-6PM CT • SUN 12PM-5PM CT
CANADA* 800-668-3021

intel inside®
pentium PROCESSOR